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**Methods and Objectives in the Organization of the
Outpatient Department of a Teaching Hospital***

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The place of the Outpatient Department in teaching in the Vanderbilt University Medical School can best be explained by outlining the general plan followed. The latter part of the second year is devoted largely to the acquisition of techniques to be applied to the study of patients; this includes the study of history taking, the interpretation of symptoms, emotional reactions, physical examinations and clinical microscopy. During the third year, each student spends eleven successive weeks on the medical wards as a clinical clerk. In these eleven weeks he has ample time to study with thoroughness, care and repetition a relatively small number of well developed clinical pictures and to become intimately acquainted with this small number of ill people. In the fourth year he spends a similar period as a responsible clinical clerk in the medical Outpatient Department. Here, he has more cases, a shorter time in which to study them and, by and large, they are more difficult because they are apt to be seen earlier in the history of the disease.

At all stages of the development, the organization of teaching is governed by our belief that students are influenced more by the example of their instructors than by their words. We believe that this example should not be limited to accuracy of diagnosis and effectiveness of treatment, but that it should include thoroughness of examination, accuracy of records, and recognition of the social and emotional factors concerned, and that it should exemplify the best type of professional relationship to the patient and to other physicians.

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The object to be attained, then, in the organization of the care of patients in any part of the University Hospital is a quality of professional work that we are willing to have the students accept as an example of good practice and to take as the model of their own activities.

This is a large order, and, like most ideals, is never completely attained. Nevertheless, also like other ideals, it may be approached, and a discussion of the means by which we try to approach it is the real substance of this paper.

First, there should be an agreement on general principles in all departments in the Outpatient Department, so that there is a reasonable unanimity as to the ideal to be attained.

Second, the organization and administration of each major division of the Outpatient Department should be entrusted to a responsible chief who will take the direction of his clinic and the teaching in it as his main university responsibility. Because of the need of continuous direction, this responsibility is so time consuming that it will be found advisable to have a man for this post who devotes a large share or all of his time to the school. Because he is responsible for an important part of the instruction given the fourth year students, he will naturally have a high rank in his department.

The director should have a reasonably free hand to work out his own ideas and concepts. Moreover, he should have the support and help not only of the head of his department but of the hospital administration in his efforts to approach the ideal set for him. His problem is so to organize his outpatient clinic that a high quality of medical work is done there. Such work demands certain conditions of time, space and personnel.

There should be enough doctors and they must have enough time to do good work. There should be enough room so that work can be done in an orderly and decent manner. There should be, of course, adequate equipment. There is no point in demanding ophthalmoscopic examinations as part of the routine if the ophthalmoscopes are always out of order. Laboratory aid should be available as easily and completely as it is to the men who work in the wards. Determinations of basal metabolic rates, electrocardiographic tracings, determinations of blood chemistry, and the bacteriological studies should be easily and constantly available. In general, in the Vanderbilt University Hospital all diagnostic methods which can be applied in the wards can also be applied in the Outpatient Department, except those procedures which require more than a few hours and those which demand that the patient be settled in his bed. Assurance of an adequate amount of time for each physician can be obtained only by a strict limitation of the number of patients per doctor. The usual theoretical

allowance is forty minutes for new patients, fifteen minutes for old patients and a maximum of two new patients per man per morning.

A teaching hospital always makes a considerable contribution to the care of the sick in the community in which it is situated. It is important to realize, however, that teaching is the first responsibility in the teaching hospital, and the needs of instruction must be put ahead of the total amount of service rendered to the community. In other words, it is more important in a teaching clinic that a small number of patients be studied properly than that a larger number of patients be cared for. It is, perhaps, desirable that the size of the clinic be influenced not only by the available number of teachers and the number of students who are attending as clerks but also by the size of the ward service. In general, it is not desirable that an institution should develop an Outpatient Department greatly out of proportion to the bed capacity of the associated in-patient service. Such a disproportion means that some patients who need hospitalization must be denied it or go elsewhere. Thus, the continuity of care of the patients is disturbed and the hospital has, perhaps, set a poor example in starting something it is unable to finish.

Few principles have as much influence in encouraging thorough work as insistence on accurate and complete records. We are not, at present, concerned with the use of records in research. Our reason for insisting on accurate and complete records is that such records are the best guarantee of accurate and complete examinations. Adequate record room service should, therefore, be supplied, and a mechanism arranged for the regular reappearance of histories for diagnosis. There should be opportunity for the discussion of doubtful diagnoses between members of the staff, preferably in a staff meeting.

No principle in our school is of greater importance in setting the standards of a clinic than the principle of the fixation of responsibility for the individual patient with the individual physician. Every patient should have his doctor. The old army game of "passing the buck" must be ruled out. It is bad for the patient, bad for the student and bad for the doctor. This fixation of responsibility must be achieved without inhibiting that freedom of consultation which is one of the advantages of hospital practice.

Finally, we are trying to train students to take care of sick people and no example is more important than one of kindness for the patient, and respect for his individuality and privacy. This example must exist in the attitude and activities of all who come in contact with patients, including not only physicians but also students, nurses, members of the administration, secretaries of clinics, clerks in the office and orderlies. An assumption

of this responsibility must be an indispensable requisite for any one assuming any of these positions.

These are some of the general principles in use here. Some specific procedures that have been found useful may also be described:

1. Each clinic in the Outpatient Department is in active charge of the chief or another responsible member of the staff at all operating times. He is responsible for the general quality of the work, for the interdepartmental relations, for the teaching, for the records, for the general attitude and atmosphere and for carrying out the rules of the organization; but he is also available for aiding with advice as to the care of their patients the younger men in the department.

2. An Outpatient Committee, including representatives of the administration, all the major clinical departments and the pharmacy, serves a useful purpose in discussing principles and details of relations and in advising the administration.

3. A "minimum record" has been established. In the Outpatient Department of the Vanderbilt University Hospital there is a general outpatient requirement. To this minimum requirement each department may add its own if it wishes. In the medical clinic the minimum record includes a complete history, a physical examination and certain routine laboratory procedures, including urine and stool examinations and a Wasserman test. There is free utilization of other laboratory procedures when they are indicated. Progress notes must be written at each visit.

4. There is a specific organization for the fixation of responsibility for each patient and for the interrelation of departments and subdepartments in the care of patients. Our methods in this regard are summarized in a memorandum.

5. There is an adequate social service department not only because social service assistance is essential in outpatient practice and bridges the gap between the doctor and his patient's background, but also because such a service by its example helps the student to see the important relation of social problems to medicine.

6. There is a simple mechanism for the review and diagnosis of current records old and new.

7. Certain principles govern the relation between the ward service and the Outpatient Department.

- (a) The Outpatient Department is not burdened with procedures which are properly carried out on the ward; e.g., dermatological consultations, the administering of neo-arsphenamine, etc.

- (b) The Outpatient Department is not over burdened with patients who are not useful in teaching, such as nurses, students and employees of

the hospital. Of course, provision may be made for the care of this group of patients in the Outpatient Department, but this should not be done at the expense of teaching.

(c) There is a free exchange of personnel between the Outpatient Department and the ward with a vertical division of major service rather than a horizontal division. As an exercise of these principles, the house staff has regular appointments in the Outpatient Department.

8. With few exceptions all patients are examined in a general clinic—medicine, surgery, pediatrics, or obstetrics—before being referred or transferred to a special clinic. Moreover, there is such regulation of special clinics that their legitimate purpose may be served without impairing the interest or teaching value of the general clinics. Legitimate objects of special clinics are recognized to be: (1) specific therapeutic treatment; e.g., antisyphilitic treatments, pneumothorax; (2) special studies; e.g., hypertension, heart failure. No special clinic should be permitted to remove from the general service all examples of any important group of diseases; e.g., chest diseases, heart diseases, metabolic diseases, etc.

9. Patients not seen for a period; e.g., six months, are considered as new patients and their cases are worked up completely.

10. There are regulations and stenographic service to insure prompt reporting of findings to the family physicians who have sent their patients to the clinic for examinations.

11. Finally, and most important, the men selected to work in such a university clinic are expected to assume the obligations of faithfulness in attendance, the desired attitude toward patients, and an acceptable quality of work and records. It requires a large staff and constant effort, but it makes fine teaching.

In conclusion, we quote a few words from a recent article by Dr. G. Canby Robinson: "The aim of the faculty must be directed beyond giving the students a sound knowledge of medicine and a safe, efficient technical training. The teaching must include the cultivation of industry and of thoroughness in thought and action and above all the inculcation of an earnest desire to be lifelong students of medicine. * * * The standards of professional life are largely set by the examples which are placed before the students in their plastic and formative years, and every teacher in the medical college should carry constantly in his thoughts the realization that he has about him young people whose future lives he may profoundly influence."

Coordination of the Fundamental Sciences and Clinical Branches in the Diagnosis and Treatment of Disease*

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I have been asked to speak to you briefly concerning the relationship which exists in the Vanderbilt University School of Medicine between the so-called departments of the fundamental medical sciences and the clinical departments, in dealing with problems, the solution of which is, after all, the responsibility of the clinicians. I hesitate to speak of coordination of the departments of the fundamental sciences and the clinical branches in the diagnosis and treatment of disease for fear of leaving the impression that there is in the Vanderbilt University School of Medicine a conscious effort or a definite plan for obtaining this cooperation, or that the members of the staffs of the departments of the fundamental medical sciences are assuming clinical responsibilities. As far as I know, there is not now nor has there been at any time since the reorganization of the Vanderbilt University School of Medicine in 1925, any definite policy for securing cooperation or coordination between the several departments other than the original contribution of Dr. Canby Robinson in the selection of the medical school faculty and in planning the arrangement and construction of the various buildings of the medical school. I am convinced that the great convenience of proximity has been largely responsible for maintaining the spirit of working together which was so prominent in the beginning.

There is in the Vanderbilt University School of Medicine a constant exhibition of interest by the departments of the fundamental sciences in clinical problems which is of inestimable value in clinical research and frequently of great help in the actual care of patients. I know of no better evidence of a real interest on the part of the staffs of the departments of the fundamental sciences in clinical problems than the fact that each of these departments has made contributions immediately important in clinical medicine. I need only mention the work of the Department of Pathology in mumps, granuloma inguinale and vaccinia; the studies of the Department of Physiology in leukocytosis and parathyroid disease; the continuous interest of the Department of Anatomy in the subjects of tu-

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berculosis and syphilis; and the contributions of the Department of Pharmacology in the treatment of intestinal parasites.

This interest on the part of the fundamental scientists in clinical problems, together with the great convenience of proximity, serves to bring about a much more productive sort of cooperation or coordination than I believe would come from any formal plan. This cooperation is continuous and informal, and the contacts are so frequent and in a sense so casual, that there are no outstanding events. I have chosen, however, to relate to you a single series of incidents which illustrate the spirit of mutual helpfulness which exists in Vanderbilt University Medical School and which, I believe, is, perhaps, the most effectual sort of cooperation which can exist in any medical school. Briefly, this series of incidents is as follows:

1. Some time in 1932, when the Department of Pathology was interested in the study of the etiology of granuloma inguinale, and when the surgical Outpatient Department was constantly on the lookout for material for this work, Dr. Demonbreum of the Department of Pathology, Dr. Meleney of the Department of Preventive Medicine, and Drs. Cunningham and Tompkins of the Department of Anatomy were informally discussing some microscopic preparations. Dr. Meleney called attention to the fact that certain cell inclusions reminded him of a specimen from a case of histoplasmosis he had recently received from Dr. Darling. The preparations were compared and discussed.

2. In November, 1932, a child was admitted to the Pediatrics Clinic and carefully studied by Dr. Dodd for the explanation of a profound anemia. This patient was apparently kept alive by repeated transfusions, but no adequate explanation for the profound anemia could be found.

3. Dr. Tompkins of the Department of Anatomy examined a sample of the patient's blood by the supravital method, and in so doing saw certain cell inclusions which reminded her of Dr. Meleney's former suggestion. The immediate result was the recognition of an instance of histoplasmosis, which I believe is the first instance in which a diagnosis has been made before death and, incidentally, the second case of this disease to be recognized in this country.

4. Dr. Demonbreum of the Department of Pathology subsequently isolated and cultivated the fungus for the first time. He showed that it exists in two distinct forms and was able to reproduce the disease in monkeys.

In this series of events, four separate departments are involved. This is not an isolated instance, but I think is one which may be related as a fair example of the spirit of cooperation and helpfulness which exists in the departments of the fundamental medical sciences in the solution of

problems for which, after all, the clinicians are responsible. I believe I am correct in saying that this sort of cooperation by these departments has done much to wipe out the sharp differentiation in this medical school between the first and last two years of undergraduate instruction. This interest and helpfulness have not brought a clinical atmosphere into the laboratories of the fundamental sciences, but they have extended the interest in the fundamental sciences through the clinical departments. I know I speak for all of the clinicians when I say that the help we get from the departments of the fundamental sciences has definitely added to the joy of living; and, I believe, I speak for all the fundamental departments when I state that the clinicians have never made use of them for the conduct of mere routine.

Correlation of Departmental Activities in the Instruction of Medical Students*

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Only a relatively small number of papers on this subject have been published. In these papers emphasis was placed on the interrelation which should exist between individual subjects; the necessity for emphasizing the clinical point of view in teaching the fundamental sciences; and the need for a more effective integration between the preclinical and clinical branches of the curriculum. I shall not refer to the necessity of proper correlation between the respective clinical branches or services because this is obviously necessary and presumably is achieved in every medical school and teaching hospital, as this is an indispensable procedure in diagnosis, and also in the treatment of patients.

In a volume of physiological papers dedicated in 1921 to Dr. August Krogh in recognition of his great contributions to science is a paper entitled "Physiology in Clinical Teaching" by Dr. James H. Means, professor of medicine in Harvard Medical School, in which is found this statement: "Following step by step the diversified curriculum of the present day medical school, the student may at times find difficulty in keeping clearly before him the final objective. Especially is this true during the transition from the preclinical study, that is to say, the medical sciences, to the clinical studies. At that time a new set of teachers is encountered having oftentimes an attitude widely different from the teachers of the sciences, and too frequently with but little sympathy toward these. The student may, therefore, not without reason, be inclined to wonder why he has been obliged to devote so much time to the acquiring of rather abstract knowledge with but little apparent bearing on the real training for his chosen profession."

"The reduction of this lack of continuity, this disarticulation in the medical course, may be achieved by two remedies; first, by the introduction of the clinical flavor in the beginning of the medical school course, and second, by the prolongation of the scientific flavor into the clinical years. Both of these remedies will probably have to be administered directly by clinicians, as is proper, but in each case the clinician can only

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be successful if he has the cordial support of the men of pure science."

Although there may be at the present time more effective correlation between the teaching of the fundamental sciences and the clinical branches than obtained many years ago, doubtless there is still need, in the majority of medical schools, for continued interest in accomplishing this objective in a more satisfactory way. I wish to make clear at the outset that no formal plan has been developed by our faculty with a view of correlating instruction between individual subjects during the first two years of the medical course nor between the fundamental sciences and the clinical branches of the curriculum. This would appear undesirable because opportunity should be afforded for the development of spontaneous interest and initiative by the teaching staff individually and collectively in achieving this objective. Nor should undue administrative influence be used to effect a plan or system of correlation or integration by the concerted action of the faculty, because this would doubtless develop a sense of pressure, and as a consequence the creative spirit and cooperative attitude which should exist among members of a medical faculty may be suppressed or destroyed.

Moreover, I do not contend that consistent effort should be made to emphasize the clinical point of view in teaching a fundamental science. There is an inherent theoretical and practical value in acquiring a knowledge of the subject as a basic science—a process to exact mental discipline and to develop in the thinking and attitude of the student the scientific method. This concept, if properly developed in the training of the medical student, will not only give him a broader outlook concerning his obligations as a physician, but will also afford a basis on which he himself may build both from the standpoint of clinical medicine and of research. It is also of fundamental importance that the student acquire an intelligent point of view with reference to experimental medicine as well as ways and means of applying his knowledge in the diagnosis and treatment of disease.

In this discussion I do not wish to be understood as unduly emphasizing any procedure or plan of instruction as an indispensable factor in the preparation of medical students for the practice of medicine. One may contend that students should be so well chosen for the study of medicine that they would have or would readily acquire the ability to integrate automatically their knowledge of the basic sciences and the clinical branches in the care and treatment of patients. This would be ideal, but, unfortunately, we have not reached this utopian period in medical education. This is certainly not borne out by experience. It, therefore, may be maintained that the interest and cooperation of the faculty with reference

to applying the principle of correlation in teaching the fundamental sciences in relation to preventive and clinical medicine is of definite practical value. There should be no "closed compartments" in the curricular activities of a medical school.

An abstract discussion of methods that may be used to correlate the teaching of the fundamental sciences individually, and, in turn, these in relation to the clinical branches, would only serve to emphasize a principle which is generally accepted and the application of which is being secured with, perhaps, varying degrees of success in the various schools of medicine. It is implied in the title of this paper that information will be presented with reference to the correlation of departmental activities in the teaching of students in the School of Medicine of Vanderbilt University. This I shall endeavor to do by using a few significant illustrations of what is being done.

The heads of the respective departments were interviewed concerning this matter to ascertain whether or not integration or correlation was being effected as a principle in instruction and, if so, in what ways it was being accomplished and whether or not in the experience of the teacher it was of value. There was essential agreement that a correlation between the preclinical and clinical branches is of definite value in the instruction of medical students. It was found that all departments were making some contribution in this respect.

No department is carrying out this concept under pressure or with the feeling that it must be done because, speaking administratively, it is expected to be or is a curricular requirement. On the contrary, members of the faculty pursue their work with a spirit of freedom and independence in the use of methods of teaching which according to their experience and knowledge are conducive to attaining the best results.

Among members of our faculty there is obviously a wholesome interest and cooperative attitude in the correlation of departmental activities with particular reference to emphasizing the clinical point of view during the first two years in the medical curriculum, and also in the application of knowledge gained during the preclinical years in the work of the clinic and at the bedside of the patient.

In a treatise on "Medical Education and the Reform of Medical Studies" by Dr. E. Burnet, published in October, 1933, under the auspices of the Health Section of the League of Nations, the following statement is made: "Physiology is coming to be regarded more and more as the fundamental science par excellence not only by physicians but also by surgeons: 'We must learn to operate as physiologists.' (P. Duval). This quotation is being used in the broader sense to emphasize the necessity for

a comprehensive knowledge of both function and structure. The continued teaching of physiology in clinical subjects is an indispensable factor in the experience and preparation of the medical student for practice." The preventive idea will also permeate medical education particularly through study and research in physiology.

In a communication from Dr. Walter E. Garrey, professor of physiology in the Vanderbilt University Medical School, it is of interest to quote the following statement with reference to the teaching of physiology: "As a future practitioner of medicine the medical student must learn what constitutes the normal activity of the human body and must further be initiated into the mechanisms by which that activity is maintained. It is the purpose of the physiologist to see that he gets this fundamental training. This calls for a course of study which presents salient physiological facts, but more important still is the necessity for a thorough grounding in physiological principles and the mechanisms by which physiological adjustments are intermediated. Keeping in mind the fact that a medical course is a technical course, our presentation of facts is naturally directed to human physiology; the principles are studied where they present themselves in the least complicated form, but wherever these principles can be demonstrated with sufficient clearness, they are studied on mammals or man. About 25 per cent of our total laboratory experimentation is done on students themselves, and an equal amount of laboratory work is done on mammals to the end that the student may be presented with phenomena as he will see them in his clinical practice. An occasional demonstration is made by the use of clinical cases, but only where such demonstration presents a principle or a mechanism as well or better than other experimental material and not with a view of holding a clinic—we teach physiology not clinical medicine. Upon occasions also some member of the clinical staff lectures to the students in physiology on some topic upon which he can speak with greater authority than our own staff. The effect of such episodes is mainly psychological in that it impresses the student with the fact that the clinician must know and have a scientific interest in physiology and that for clinical progress this attitude is indispensable.

"The proximity of the activities of laboratories of the fundamental sciences and the clinics and the fine esprit of the various staffs has resulted in a continuous interchange of ideas and in informal conferences of incalculable value. The students see these cooperative approaches which have a salutary effect on their attitude toward the subject. This psychological effect is enhanced when, as is sometimes the case, they see the clinicians carrying on experimental work in our department.

"I feel that these activities suffice to indicate the intimate relationships

between the Department of Physiology and the clinical subjects, which have developed without any possibility of criticism that the physiologist has in the slightest degree overstepped the boundaries of pure physiology or arrogated to himself any prerogatives of clinical medicine."

I was particularly interested in a somewhat detailed statement obtained from Dr. C. S. Robinson, professor of biochemistry, concerning the correlation which has been effected in the teaching of biochemistry with the closely allied subject of physiology and also with medicine and pediatrics. He states: "The cooperative efforts in the teaching of biochemistry have two purposes: (1) to correlate biochemistry with physiology, the course of which runs concurrently with that of biochemistry, and (2) to continue the instruction in biochemistry throughout the clinical years so that the fundamental training of the first year may be utilized as much as possible in subsequent teaching. With these objectives there is an active cooperation between the department of biochemistry and the departments of physiology, medicine and pediatrics. A well-ordered coordination exists between the departments of biochemistry and physiology in the content of the courses and in the arrangement of the subject matter so as to supplement each other wherever possible and to avoid undue emphasis upon certain subjects by one department, to eliminate unnecessary duplication of instruction, and to reinforce each other in presenting as far as practicable a well-balanced consideration of subjects which are closely related to both physiology and biochemistry.

"The cooperative efforts of the departments of biochemistry and medicine are directed so as to create in the minds of the students an appreciation of the importance of the chemical aspects of disease in the treatment of patients. Members of the departments of medicine and pediatrics cooperate in giving lectures to the class on related clinical subjects. Thus when carbohydrate metabolism is studied in biochemistry an internist talks to the class about its clinical aspects, even showing patients from his clinic, and discusses hospital records of patients. A similar procedure is followed in the consideration of basal metabolism.

"The first year medical students are given further opportunity to obtain the clinical point of view in teaching biochemistry by joint sessions with the second year class in medicine. This affords an opportunity under the direction of an internist to emphasize the chemical phases of certain clinical problems such as cyanosis, anoxia and acidosis. These subjects are discussed from both the biochemical and clinical points of view by the use of patients.

"One of the most unsatisfactory experiences in the teaching of biochemistry to medical students both from the standpoint of the teacher and

student has been the discrepancies in the presentation of chemical principles in the first and in subsequent years of the curriculum. The students obtain a modern knowledge in biochemistry during the first year and in subsequent years they may be under the direction of men usually trained elsewhere and from one to many years previously, who in the meantime may not have kept up with the progress of biochemistry. In reconciling conflicting points of view the student is expected to use discriminative judgment, which, because of his immaturity and lack of experience, he does not possess. Confusion in his own mind and lack of confidence in his teacher's may too often occur.

"To obviate this it is planned that members of the department of biochemistry will participate in the instruction in certain fields of medicine. Thus, in the course in clinical pathology in the second year, the clinical methods described and discussed in the first year can be applied by a biochemist and compared with other methods used by various members of the clinical staff in more detail than was possible during the preceding year. The students can then evaluate them for themselves.

"Similar cooperation is contemplated during the third and fourth years when the staff of the department of biochemistry can return in kind the services rendered by the clinicians in teaching the first year class. The two departments have jointly selected a biochemist whose chief duty will be to coordinate the activities of these departments.

"The results so far have been extremely gratifying. The actual application of otherwise purely academic knowledge to hospital patients is a stimulus to the first year students that converts mere interest into positive enthusiasm. Not only does it impress them with the value of the chemical facts that they are learning, but it also makes them realize that the clinical and preclinical staffs are cooperating actively and harmoniously for their benefit. The result is that any apparent disagreement in statements or differences in points of view are accepted by the students as honest differences of opinion and not as evidence of faculty dissention and criticism."

The chief purpose of this paper is to give some idea of the approach in giving medical students the clinical point of view in teaching the fundamental sciences and also the correlation which may be effected in the application of scientific knowledge, gained during the preclinical years, in the analysis and interpretation of observations at the bedside of the patient. To quote a communication from Dr. Ernest W. Goodpasture, professor of pathology: "We adhere to the principle that it is the common purpose of all the departments in a medical school to assist the students to qualify themselves to practice medicine. The delegation of the teaching function to several departments is a pedagogic mechanism designed to

simplify the educational process rather than a manifestation of disintegration resulting from distinctiveness or individuality of the subject matter within medical science. The content of medical science is so essentially interrelated that any other point of view would seem to be obviously mistaken.

"But the interrelationship of the subject matter of various departments may for convenience be graduated, so that one subject under certain conditions may be associated more closely with another to evident advantage. Thus the teaching of bacteriology is concurrent with and intimately related to the teaching of pathologic anatomy. There are two important ways in which this interrelationship is effected in practice. In the first place, the teaching of the pathology of infectious diseases is arranged so far as possible, to coincide with the study in the laboratory of bacteriology of the specific infectious agents responsible for the particular disease under consideration at the time. In this way the student is impressed with the etiologic aspect of infectious processes. In the second place, opportunity is afforded to utilize the autopsy for the teaching of bacteriology, thus acquainting the student with procedures and methods of studying the etiologic agents of infection as obtained from the human body.

"Students are assigned to each autopsy in groups of four. Two students, under an instructor, are responsible for the recognition, isolation and classification of the important microorganisms concerned, while the other two are responsible for a description of the gross and microscopic lesions with which the particular microorganisms were associated. Each group of four students works in the same laboratory, having their seats side by side, in both pathology and bacteriology. One hour each week is devoted, by an instructor in the department, to a correlation before the entire class of the association of parasitism and disease in general, and, in particular, based upon the students' own studies of their individual cases.

"The study of bacteriology is also correlated with the study of preventive medicine and public health. After the organisms in a particular group are studied in the bacteriology laboratory, a discussion is given by a member of the department of preventive medicine and public health on significant epidemiological principles in the prevention and treatment of diseases caused by the group of organisms studied. This procedure serves to relate the subject matter more definitely to the clinical and public health aspects of medicine.

"Pathology and bacteriology are correlated with the clinical departments in a variety of ways; namely, through a course of lectures to fourth year students upon the subject of immunity, and especially through the autopsy. At the autopsy, discussions are conducted by members of the

clinical staffs in regard to various aspects of the case presented; and every autopsy protocol, when complete, has a full abstract of the clinical history. These completed protocols are used extensively in the curricular course in pathology and an attempt is made to correlate the pathologic anatomy with the clinical manifestations as a part of the laboratory work.

"During the weekly clinical pathological conferences every autopsy performed during the week preceding is presented and discussed by the clinicians, the pathologist and others who may be interested before the students of the third and fourth year classes.

"In the teaching of pathology an effort is made to emphasize the application of anatomical, physiological and chemical knowledge, on the one hand, and clinical and preventive aspects of disease, on the other."

The facts presented with reference to the subjects of physiology, biochemistry and pathology serve to indicate procedures which are being employed to correlate departmental activities in the instruction of medical students. I wish to state also that the department of preventive medicine and public health cooperates with all clinical services in teaching the principles of preventive medicine and public health with particular reference to the need of the practitioner in dealing with individual patients, and in cooperation with public health agencies for the prevention and control of disease.

In summary, all of the departments of the Vanderbilt University Medical School express an interest and maintain a cooperative attitude in emphasizing the clinical point of view in teaching the fundamental sciences, and in the integration of the knowledge acquired during the first two years with the clinical branches. No concerted plan has been developed for this purpose; the spontaneous interest and initiative of members of the faculty are the significant factors in the results obtained and no undue administrative influence is employed in carrying on curricular activities. The objective of the correlation of departmental activities with reference to teaching the fundamental sciences, and in turn, the integration of these in relation to clinical branches is to prepare the students to prevent disease and properly care for patients. Students are exposed also to the experimental method and, if possible, an interest is created in carrying on investigative work with a view to enlarging their experience and adding new knowledge concerning the prevention, treatment and cure of disease.

The Advantages Obtained from the Cooperation of Several Departments in Research Programs*

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The complexity of investigation in medical research has increased tremendously during the last fifty years. Prior to 1900, joint publications were relatively few in number, and those which did appear represented the work of two or more individuals having the same type of training, and resulted from personal associations rather than from the need of intellectual assistance. The earlier joint publications appeared under the names of two or more anatomists, pathologists or chemists, whereas now journals regularly contain contributions in which the several authors represent entirely different specialties and departments. In addition to the fact that the type of combinations in joint research has been modified by this increase in specialization, there has also been a definite increase since 1900 in the ratio of contributions having more than one author to those published under a single name.

Vanderbilt has offered an excellent opportunity for the analysis of the factors of greatest importance in the development of joint research as a large group of workers previously unrelated to each other came together here in 1925. Many interesting intellectual combinations have developed and much of the best work which has been produced has been the joint effort of members of more than one department. From the consideration of the developments here, as well as from the study of the question in general, certain conclusions may be drawn.

It is quite obvious that many problems in medical research require more than a single type of training and intellectual approach, and cannot be solved by a dozen individuals having the same type of scientific knowledge. There are morphologic problems which demand the assistance of the chemist, and chemical problems which need the morphologist. It is no longer feasible to separate or ignore the conditions which have come to make a cooperative approach the only one satisfactory for adequate results in certain problems. We may consider this development as one which is not simply advantageous and, therefore, easily dispensed with, but as one which represents the direct and unavoidable outcome of the greater accumulation

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of knowledge and the more intensified specialization that has characterized the development of medicine during the last fifty years.

One must recognize that in most instances any scientific problem which eventuates in a joint project will originate as the specific interest of a single investigator or a group of investigators working in the same department. After a period of preliminary investigation these individuals discover the need of specific assistance which is beyond the limits of their own training. The fulfillment of this condition represents the major factor in the initiation of joint research. It is clearly of great importance to consider the character of the mechanism involved in obtaining the cooperation in a given problem of individuals having different training. They must obviously be brought together by some means and the nature of the means is the matter of most importance.

There are three obvious ways in which this may be accomplished. First, some executive in authority may order individuals of different training, who are under his control, to devote their attentions to the particular problem in view. It is obvious that such a procedure is absurdly out of line with the broad viewpoints of modern research, and that anyone attempting to do so would immediately find himself suppressing the individual and spiritual freedom which is the single most important factor in the development of research.

Second, it is possible to initiate group research by purely financial arrangements. Suppose a morphologist is studying an endocrine gland, and, in the course of his investigations, obtains evidence which points to a hitherto unknown function. The necessity immediately arises for the assistance of an individual capable of studying the chemical problems involved. The morphologist, in his desire to further his own problem, transplants a chemist from a department of chemistry, and brings him into the problem as a hired assistant. The contribution of the chemist will undoubtedly be useful, and the problem itself will be furthered, but such an arrangement will often result in the chemist's losing his priority in departmental matters and forfeiting his opportunity for advancement. The transplantation of individuals from the department to which their training allocates them to alien departments, merely because they can earn more money or carry out a given procedure, usually results in the stultification of their work and the failure of their development. There are, of course, exceptions to the above conditions. There are individuals for whom such experience would be invaluable if it were not too prolonged, and others who would gain enough in personal happiness by such temporary isolation to repay them for the loss in their developmental program. It is only in instances where the justification is measured in terms of the

return to the individual that there is cause for abrogating the general principle.

The third way in which group research may be initiated is by the association of individuals who have gained interest in the same general problem independently of each other or where repeated discussions and consultations bring about the spread of interest from department to department. As we have noted, the majority of problems which eventually become group problems are initiated in one field of study and include others as the need arises.

Let us examine the development of the study of syphilis at Vanderbilt as an example of the question in point. Dr. Hugh Morgan of the department of medicine was specifically concerned with the study of the infectiveness of *Treponema pallida*. He was familiar with the investigations of our group on tuberculosis. He proposed the examination of syphilitic lesions with our methods, to see if, as in tuberculosis, the supravital studies might lead to new pathologic concepts. The results yielded by this study have initiated work which has gone far beyond our original ideas. These were concerned only with the pathologic changes, but the findings which were made when various substances were used on animals with experimental syphilis have led to the consideration of the possible therapeutic value to the human in the use of lecithin. Certain problems have developed which have interested members of the department of biochemistry, and, with their assistance, the study of many of the more fundamental questions concerning the tissue changes in syphilis have been undertaken.

Research based on any principle other than the specific and intense interest of those actually working on the problem will usually fail to produce all the results which are inherent in the problem. Planned programs of research will yield results which are useful and valuable, but these results will be limited to scientific accomplishment and will fail to add to the essential improvement of those contributing to the study.

All the objectives which can be gained as the result of cooperative research are, of course, too numerous to discuss at this time. We can think of the results of cooperative research as primary and secondary. The primary result is the accumulation of data and the completion of the problem. The secondary results are those effects which happen outside of the specific furtherance of the scientific results. Among these secondary results there are several of interest.

The value of joint research to students may be very great, particularly as a method of starting them in investigation. In the regular curriculum they pass from technique to technique, and from department to department. When they are participating in or exposed to joint problems,

it becomes obvious to them that these are not limited by individual persons or individual departments. Thus the student, at the moment studying in a morphologic department, may, if offered a morphologic problem, fail to see its general significance, but if the problem with which he first becomes acquainted is one with ramifications reaching to the ward and the patient, he will recognize the ubiquity of medical thought and the unity of medical research. He will, likewise, benefit continuously from the interplay of the intellectual approach of the various individuals involved, and under such conditions he will find stimulus, instruction, guidance and satisfaction.

Joint research stimulates openness of mind and generosity of spirit. Mutual and constant criticism will unearth flaws in technique and reasoning which will escape a single mind and even several minds having the same training. The necessity for complete accuracy, in order to facilitate the interchange of data, produces a more complete control. It is an unfortunate tendency among many investigators to forget that scientific principles and scientific accomplishment are the true aims of research rather than personal credit and personal gain. Where secrecy prevails, science deteriorates, and every influence which tends to stimulate open discussion and discourage secrecy makes a contribution of value, particularly to the younger men whose science habits and science thoughts are not yet formed and crystalized.

Specialization has become a necessity because of the enormous amount of knowledge which we have accumulated. That this amount of knowledge is being continually increased and that this results in more and more specialization is obvious. As a result of such specialization, there is a distinct tendency for investigators to become more narrowly fixed within the limits of their interests than is determined by the necessities of the period in which they live. It is important to recognize that joint research broadens the scope of individuals whose profound knowledge of a given subject may tend to exclude valuable contacts with fields which are outside their specific training. In their intense preoccupation there are many workers who fail to realize the value of information which is not complete and miss opportunities to broaden their outlook and increase their effectiveness.

Joint research is of definite value in this connection. Where individuals of different training and of different outlook work together on the same problem, they inevitably bring freshness of thought to each other and assist in broadening each other's viewpoints. Specialization will inevitably increase in proportion to the additions to our knowledge. The unhappy consequences of such a development must be faced and every effort must

be carried out to avoid those stultifying influences which may easily result from such a course. It is impossible now to accumulate the encyclopedic knowledge of Buckle or Humbolt. We must, instead, strive to meet these difficulties by other means, and the best method available is by more and more combinations, new forms of group research and group endeavor in which each member of the group brings his special knowledge to the aid of the others. Thus, joint research may be looked upon not only as an inevitable outcome of the specialization which has become an essential part of our development, but also as the one treatment which may be applied with any hope of minimizing the personal misfortunes that cannot be dissociated from intense specialization.

What possible contribution can be made by departmental heads and other executives toward the development of joint research? We have seen that it is important. We recognize that it may occur wisely only when all the seeds are present in the minds of the workers. The one contribution which can safely be made by executives is in the development of the proper atmosphere and the proper conditions for it to flourish. Perhaps, one might say that many research groups are born naturally, but that they are fragile children and easily perish from faulty nutrition or intellectual distempers. They demand an atmosphere which is at once congenial and sustaining. It is, however, one which should never be forced by hothouse methods, or interfered with by experimental agitation. The maximum contribution that can be made to these intellectual children is to give them a sincere welcome, good food and congenial surroundings.

DISCUSSION

On papers by Drs. Burwell and Youmans, Brooks, Leathers and Cunningham.

DR. JOHN WYCKOFF (New York University): I would like to make one point about Dr. Burwell's paper. I wish I might have written it myself as it expresses so much better than I could all the things I feel about outpatient teaching.

Those of us who teach in medical schools where the relation with the hospital is not a complete union always have difficulty when there is a reorganization of the service if accent is placed on the fact that this change is needed for teaching for research.

About three years ago I was chairman of a committee which reorganized the outpatient service of a large city hospital in which three universities are teaching. The committee, when it began its work, decided it would never use the word "teaching," and that it would never use the word "research," because whenever those words were used we met with violent opposition. We were able to do nearly all the things which Dr. Burwell has suggested. We were able to place very definite responsibility on individuals. We were able to make those individuals the senior members of the staff. We were able, although it was an

enormous outpatient service with more than 1,000 patients a day, to change attitudes so that, I think, real consideration is given to patients. We were able to unite an in-service and an out-service. We were able to develop a rather careful work-up of cases.

There was one thing we could not do. We could not arrange for limitations of intake. On the other hand, we were able to get the commissioner of the city to allow for the districting of patients, which at first was thought to be impossible, and in that way we were able, to a certain extent, to limit the intake of patients.

In the course of about two years we were able to bring about, not, of course, as perfectly as here at Vanderbilt, many of these principles which Dr. Burwell has mentioned without using the word "teaching," and without using the word "research."

DR. C. D. LEAKE (University of California): This interesting symposium on the correlation of departmental activities and instruction of medical students has prompted me to ask whether any institutions represented here have seriously considered a plan that was broached almost ten years ago in the effort to promote a psychological atmosphere for students to break down interdepartmental barriers, and to promote that coordination among different types of instruction which we all desire. This plan was proposed under the name of the student unit laboratory. It was a device by which four students might be placed together in a room measuring approximately fifteen by twenty feet where they would have desk space and book shelves for their own work; where, for example, in their freshman year they could do at one time their dissecting, microscopic work, biochemical work or physiological experimentation. During their second year, as suggested by Dr. Leathers, they might carry along their work in bacteriology, pathology and clinical diagnosis under the same surroundings and under the same environment, with the necessary faculty or instructional staff moving from one room to another.

The same device might be used, in fact, in the clinical years, so that there might be provided a place where patients would be examined under the proper surroundings, permitting the use of the facilities of the preclinical studies. I do not know whether anything ever developed from that suggestion.

DR. C. SIDNEY BURWELL (Vanderbilt University): I think Dr. Wyckoff is very warmly to be congratulated in having achieved these objectives, since the union between the hospital and the school is not a complete one. I share thoroughly, I am sure, his viewpoint as to the relationship between the care of patients and teaching.

The viewpoint we have at Vanderbilt is that there are only two fundamental needs for clinical teaching. One is good care of patients, and the second is the existence of a group of men who are interested in helping students learn what they can from these patients. I think we do not need to talk about the technique of teaching because if we take the right care of patients the teaching will take care of itself.

Vanderbilt University School of Nursing*

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Before I attempt to tell you anything about the development of the Vanderbilt School of Nursing, I would like to repeat a little story which I heard a few weeks ago, as told by Secretary Perkins. It ran something like this: An old man, I believe he was 92 or 93 years old, appeared in a cobbler's shop one morning and said to the cobbler, "George, I want you to put some new soles on these shoes, and I want you to do a mighty swell job on them because they have to last me a long time."

The cobbler looked at him and said, "Granddad, why are you worryin' about how long your shoes will last?"

The old man said to him, "Well, I been readin' statistics lately, George, and they say very few deaths are recorded of men who have passed their ninetieth birthday."

What I am trying to say to you is that the fact is important, but frequently the interpretation of the fact is more important.

In attempting to tell you something about the development of Vanderbilt School of Nursing, I am afraid I shall not have time to interpret as fully as I might like the different facts I am attempting to present to you about the school; I can only suggest to those of you who would like to have further information about our thinking relative to the development of nursing education here at Vanderbilt that you might call on me in my office and give me an opportunity to explain in detail that which I shall now briefly describe.

To begin with, the present Vanderbilt School of Nursing was born into the world about 1925, at which time the Rockefeller Foundation of New York City gave to Vanderbilt University the sum of \$100,000 to be spent over a period of five years to further the development of nursing education in this university. During that period of time, namely, from 1925 to 1930, the school of nursing remained an adjunct of Vanderbilt Hospital and was operated largely as a hospital training school for nurses.

In 1930, it was deemed best to reorganize the school—may I say that it was Dr. Leathers' thinking which was largely responsible for this change—from an administrative viewpoint and, at the same time, to expand and enlarge its educational program. So at that time the school of nursing

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ceased to be an adjunct of Vanderbilt University and was made one of the academic units comprising Vanderbilt University, thus the organization of the School of Nursing today, therefore, is similar to that of the other schools and colleges making up this university.

In regard to the educational developments of the school, I should like to tell you that we first made a study of the community, so to speak—that is, we first made every effort to ascertain the type of nurse which would be most needed here in the southern area. (This school was really created to serve the fourteen southern states.) Certain principles were laid down or accepted, and around those three or four basic principles the school has since been developed. As I have said, I shall not attempt to give any details to you, but will present merely these principles which lie behind or gave rise to the development of the school and its program.

To begin with, the first principle which we accepted was the fact that the Vanderbilt School of Nursing should attempt to produce nurses who could be used by the community; or, to put it another way, it was our desire to promote an educational program which would tend to develop a definite correlation between the production and the utilization of nurses.

I think you have all heard rumors in the past few years that there has been an overproduction of nurses in the United States. The fact is a true fact as far as it goes, but I would like to suggest that, perhaps, it would be well to qualify that fact in some respects. It is our belief that the overproduction of nurses we hear about, and which we see, is largely an overproduction of bedside nurses. I do not believe anyone could seriously claim, after a careful and thoughtful analysis of the situation, that there are actually too many nurses in the United States today. There is little question that the community could absorb many more nurses, granted they were prepared in such a way as to meet all the varying types of nursing service the modern community needs (not merely bedside nursing).

The employment situation amongst nurses in this country made us feel that there was no excuse for offering an educational program which would prepare nurses for bedside nursing only. I need not tell you, too, that bedside nursing is a system or form of nursing which is only usable, so to speak, in an urban area; neither is it very practical in an area where there is a limited economic surplus. The South is largely rural, and the economic surplus here is not nearly as great as it is in other sections of the country. So again, we felt that this school would not be meeting the nursing needs of the community in a proper fashion if we produced nurses prepared for bedside nursing only.

As a result of this thinking, the education program of the school was

expanded into two directions. First, we set up certain graduate nurse courses of study. One program was especially designed to prepare public health nurses; the other programs prepare graduate nurses for such nursing specialties as administration, teaching, etc., in the school of nursing and in the hospital. In addition to this (and I think this is a most important feature of our program), we decided that what we should attempt to do was to integrate public health nursing into the basic curriculum, so that every student completing the basic or undergraduate nurse course of study in the Vanderbilt School of Nursing would be as well prepared to fill a staff position in the field of public health nursing as in the curative field. I could spend a great deal of time at this point in telling you of our thinking and planning in regard to the integration of public health nursing into the basic curriculum. It is not an easy problem to solve, I assure you. However, we are moving forward very slowly and cautiously, and we have already met with sufficient success apparently to justify our effort.

It is necessary to suggest at this point certain facts in regard to the preparation of public health nurses for the southern states: as the South is largely rural, the public health nurses in this area, as a rule, function in the rural area. The public health nurses in the South are, on the whole, attached to the county health unit, and, therefore, need special preparation for the rural field. Hence, we are not only emphasizing public health nursing in our educational program, but we are also emphasizing rural public health nursing.

The Vanderbilt School of Nursing is one of the few schools (I believe it is the only school at the present time) which actually has a rural practice field where nurses are prepared for rural public health nursing. It might interest you to know that the Commonwealth Fund of New York City has generously supplied the school with four Ford coupes and also gives us a yearly grant to cover the cost of operating these cars. These cars, of course, solve the vexing problem of student transportation in a rural area.

To return to the matter of the undergraduate course in nursing: It is obvious that the assignment of the students to clinical experience naturally assumes rather a different complexion when efforts are made to prepare the student for the field of public health as well as for the curative field. We are assigning our student nurses at the present time—this is true of each and every undergraduate nurse—not only to the dispensary for a well rounded, balanced experience in an outpatient department, but we are also assigning each student to Rutherford County (the rural practice field I mentioned) for a certain period of time. Thus, in our effort to

integrate public health nursing into the basic curriculum, we are providing certain field experience in public health work as well as classroom instruction.

The next principle which I would present to you at this point is a principle which has affected very greatly the development of our school. The principle in question is the principle that it would be well, if not highly advisable, to abolish the apprenticeship system of nursing. Whenever a school of nursing attempts to offer a bona fide professional education to the student it would appear that it is entirely logical to assume at that moment that the student should be called on to meet the cost of that education (the student and her parents) in precisely the same way that the student in any other professional school is called on to bear the expense of her education. Also, I personally feel very deeply, indeed, that the apprenticeship system of nursing is a serious menace to the social effectualness of American nursing. This system not only permits exploitation of the student nurse, but it actually invites it. Also, it is largely responsible for the fact that there is a growing lack of correlation between the production and utilization of nurses.

There are other reasons, too, which lie behind our feeling that we should make every effort to abolish the apprenticeship system of nursing. Therefore, we are now moving forward on the basis that the student entering the Vanderbilt School of Nursing will be required to pay not only tuition fees but maintenance fees as well.

At the present time, Vanderbilt Hospital has absolutely no expense in regard to the education of the student nurse. In addition, the School of Nursing is now paying Vanderbilt Hospital a certain amount of money for the maintenance of student nurses.

I should mention at this point that under the present arrangement which we have, the freshman nurse, that is, the first year nurse, is not assigned to hospital service as such. Her name does not appear on the time slips of the Department of Nursing staff, etc. The student, of course, is on the ward a great deal learning nursing, but she is not there for service; she is there merely to be taught. During this first year, therefore, it seemed entirely logical that the hospital should be compensated to some degree for the maintenance it is supplying freshmen nurses.

This is a very logical time to state that the third principle which was adopted and which has influenced the entire development in the Vanderbilt School of Nursing is the principle that in everything we undertake we should move forward very slowly and very cautiously. We are really and truly trying to "evolve" a program instead of trying to "revolutionize" the whole program in a single night.

Therefore, when I speak of the compensation of the hospital for the maintenance of student nurses, you will realize the point I made a moment ago represents only the first step of a system which, in time, will see the hospital entirely free of any expense relating to the education of the student nurse or the maintenance of the student nurse.

Also, I think I should mention to you—of course, this is entirely logical—that the nurse members of the faculty of the School of Nursing are not maintained by Vanderbilt Hospital. They receive their entire salary in terms of money, and if they get their meals in the hospital and have a room in Mary Kirkland Hall, the nurses' residence, they pay the hospital for this board and room.

One of the greatest problems (and this is not news to you, I am sure) which must be faced in the development of a school of nursing on a university level is the problem of how to dovetail the interests of the school of nursing with the interests of the hospital. It is a very difficult problem.

Here, at Vanderbilt University, we have a dean of the School of Nursing who is not responsible for the hospital nursing service. There is a superintendent of nurses who is responsible for the hospital nursing service. I think one of the finest, soundest developments which has occurred in our nursing project is the very fine relationship which has grown up between the School of Nursing and the Hospital, as well as between the School of Nursing and the School of Medicine. We not only have very effective working relationships but very harmonious working relationships. I think I can say with entire truth that the hospital authorities at the present time are not only interested in the development of the School of Nursing, but that they are even enthusiastic about it. They have shown a high degree of sympathetic interest in what is happening in the School of Nursing. This means only one thing, namely, that the developments which have taken place in the School of Nursing in the past four years have not only pleased those responsible for the School of Nursing—that is, we have complete freedom to move forward in the direction of setting up an educational program which would more effectively prepare nurses for community service—but these developments have been accomplished without sacrificing the hospital's interests.

In closing, I would like to leave the thought with you that we here at Vanderbilt do not talk about "the education of the nurse." I might even go so far as to say that we are not interested in the "education of the nurse;" we are interested in preparing the nurse more effectively for community service. And, I think you will agree with me, there is a difference between these two expressions.

Throughout the entire development of the School of Nursing we have tried very hard, indeed, to keep our feet on the ground. We have kept our feet on the ground in regard to this more ambitious program of education which we are offering to nurses by constantly reminding ourselves that the only earthly excuse for introducing nursing into a university atmosphere, or raising nursing from the status of a craft to that of a profession, is to prepare nurses in such a manner that they may more completely, more adequately meet the nursing needs of the modern community.

Scope and Teaching of Psychobiology

ADOLF MEYER

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In these days when every social worker and many nurses receive training in mental hygiene, and popular magazines emphasize the rôle of emotions and personal attitudes in the causation of failures and discomforts, we should not send out physicians who are untrained in the understanding and management of such matters. The question arises: shall we leave all that to psychiatry courses and to chance reading? Shall we depend on some course of medical psychology and sociology? Or shall we help the student and physician to meet these facts with an organized common sense able to hold its own and really do well in competition with so much of modern hocus-pocus? We prefer to give the student from the beginning of his medical training, or at any rate in the first year, some practical and theoretical experience in personality study, personality function and personality management, under the heading of "psychobiology." What does that mean?

Until recently the behavior and functioning of the individual has been divided between psychology and physiology, with most of the emphasis placed on the study of the various organs and with a certain helplessness in bringing in a more or less timid use of psychology or resorting to one or another cult of psychotherapy. Too often the mental developments and mental factors are brushed aside or they are exaggerated or misjudged. Some patients who are seriously ill are treated as mere complainers and as being hysterical and hypochondriacal; in other cases, serious emotional disturbances are concealed and overlooked. Much of this is due to the deeply ingrained tendency to consider mind and body apart and to failure to see that this splits human functioning out of keeping with reality. When we speak of emotional problems, we know very well that they include a strain on the heart, the visceral functions, the appetite, digestion and attention to the bowels, the effectiveness of sleep and of recreation. We therefore come to speak of psychobiology, which includes the living body in action and describes all that behavior to which we must pay attention.

When some one draws our attention to a case of gastric ulcer and we look into the mode of living of the patient, it is not merely a case of suffering and, perhaps, a fussy or troubled soul in need of consolation and verbal advice, but a call for a change of activity and behavior. Why, then, talk of psychology as if it occurred without a body, and of the

mismanaged body functions as if they were not part of the disturbed emotions and behavior, to be corrected by equally real and physical normal behavior?

Is this psychology? Yes, but a psychology that is biological and that takes life as it is without any splitting into something mental and something physical. We study behavior not merely as a function of the mind and of various parts of the body, but as a function of the individual, and by that we mean the living organism, not a mysteriously split entity. When we see somebody eating or drinking too much or too hurriedly, or overworking, with inadequate recreation, we want to know why and how this occurs, and we modify it not merely as a state of mind but as behavior. This is what we imply by psychobiology—undivided and direct attention to the person and to the function, health and efficiency of the person as a living organism. We talk of real organismal function and behavior and its understanding and management, and offer a course in practice of sound and controllable common sense.

The medical student needs preparation to assume responsibilities with human beings. He has to know many facts not now taught because neither anatomy nor physiology can afford to preoccupy itself in these directions, yet it is clearly also his responsibility to work with man as an organized entity, as an individual, as well as with the structure and function of various parts. We demand specific experience with man and his needs in surgery and medicine and we are beginning to realize that we must deal with human nature and functioning by appropriate methods. There is a lot of idle talk of psychiatry and psycho-analysis and psychotherapy, and the physician has ultimately to bear the brunt of a great deal of criticism if he does not know what it is all about. Over and over again, we hear that 40 per cent. or more of the patients coming to a dispensary are sick in their personality functions rather than in any particular organ or function, yet we are not making any effort to teach orderly management of them, and we allow the student to flounder instead of developing sound habits of using trained common sense. We cannot afford to allow him to toss aside his twenty and more years of experience because of any wrong notion that he must wait for the coming of an unusual science.

There is much confusion between conflicting schools of psychology, often with unwise dramatization in teaching certain subjects like hysteria, hypnotism, and theories of psycho-analysis by instructors who never have worked with patients, and without any opportunity for the student to see the facts first, or ever to see the actual clinical material. For this reason, some of us turn frankly to the sound Huxleyan definition of science as

being organized common sense. In a field in which nearly every adult has more practical experience with human nature and human functioning than is set forth in most textbooks on psychology, it seemed wisest not to add so much theory, but to make certain that the worker learns to use all the plain facts. We want to start out deliberately to help the student organize what he knows about personality facts and the way to determine, record and use them, to supplement data and methods, but above all to reinforce and organize his best sense, to help him determine the assets of the individual and to see what is the share of the individual and what is the share of the parts or special organs or special situations. Let us review some examples.

If an individual does not get along well with a job, it may be because of fundamental personal incapacity or because the situation prevents it, the competitive ways of the people around him, the attitude of the foreman, or what not; or it may be his own irregular life or some emotional preoccupation, some memories, or some anticipations or fears; or there may be something the average person calls "physical." Most probably all the things mentioned are also physical, if they are real; they are, at least, organismal as well as environmental and physiologic. Any attitude, emotion, or activity, all our behavior, must be studied for what will make it intelligible and manageable. Certainly, some of the "physical" difficulties, such as insistence of perspiration and a feeling of faintness, or gastrointestinal upsets, will be understood correctly as being parts of fear and can be corrected only by treating the fear as one treats fear, by promise of protection and security, and behavior in keeping with the best common sense considering the situation, i.e., using the individual's best resources and understanding and capacity to see and use the facts—without losing time over splitting the facts into mental and physical. We deal with psychobiologic facts and methods, as far as possible of ordinary life, and, where needed, of additional technical training.

When we come to the behavior of the gastrointestinal tract, we know that, for instance, vomiting can be due either to direct irritation of the stomach, to misuse of the stomach, such as overfilling with inappropriate food, to a drug like apomorphine, to sea sickness, or to pregnancy or fear of pregnancy or even a delusion of pregnancy. In some cases it is the stomach that initiates the condition; in the last mentioned case it is the individual who gives the clue and the setting, and we must be able to determine what is operative and causative. Is the origin of the vomiting in terms of the structure of the stomach, in terms of its function, from actual disgust, or in terms of anticipation or fears or, perhaps, something about which the patient is not at all clear in his own mind? There are

patients with pregnancy delusions or pregnancy fears who will hide them and make the physician believe that they blame the diet and want relief from nothing but the stomach distress.

It is obvious that for our needs we require a psychology that can deal directly with what we use in everyday life. We study the facts (a fact is anything which makes a difference) for what they mean in actual life, and by that we mean the life of a "somebody." He is to us an organism with a life history, a biography. Psychobiology comprehends all those functions and performances which cannot properly be said to be the function of merely one or another part of the living organism, not even merely of the brain. Anyone will best understand and study and manage it as the functioning of the individual, the person, the he or she, not as a mere mind, but as a live entity with the flesh and bone of anatomy and physiology. This includes all that which has always been studied as psychology. To leave no doubt, we speak of psycho-biology. How can this be taught and kept in a form that does not merely become a theoretical affair?

The field of human total function or psychobiology is probably the one domain of science that presents not so much a mass of new information as primarily training in using what everybody knows. I regard the course as one of organizing the best critical common sense in a form usable in record keeping and in serious work with patients. It is not merely a preparation for psychiatry; it means to serve all our dealing with human beings. It is not diluted psychiatry, nor diluted psychopathology.

We stand for the principle of keeping the first year work within purview of the normal. The course is based on a questionnaire furnishing the student an outline with which to review the determining facts and factors that lead the individual to be what he is and to behave as he behaves. In order to dispel the traditional idea that personality study is all introspection, we insist on studying the ordinary lives of others as well as our own. We ask the students for a characterization of the three most different classmates. We feel that such a personality study is as important a procedure as the dissection of a cadaver and naturally an important supplement of all training with the living. Through this experience the student is prepared to extend his work to patients, whether psychiatric or seeking help anywhere else. The student studies life facts and life situations in the many differences of the normal and later in his patients. This leads from interest in more or less fixed diagnosis to an interest in the understanding of the whole patient and his problems. In the psychiatric case, the student follows genetic-dynamic considerations instead of attempting to classify and pigeon-hole his patient. He studies disease also for the accumulative results of unhealthy reactions of the individual to the demands of his environment. He studies life situations and reactions and formu-

lates his views in terms of facts and events which can be utilized to understand and modify the adaptations of the individual. The student singles out distinctive reaction patterns in his attempts to understand and group the essential demonstrable facts underlying a mental disorder.

The actual course consists of eight, two-hour, afternoon sessions. It consists of the completion of the personality study, which is the equivalent of a laboratory experience, and which activates the material for our discussions of life, without allowing the student to remain in the abstract. Experience has emphasized the usefulness of the following topics which constitute the objective nature and functioning of the personality:

OUTLINE OF PERSONALITY STUDY

I. General personality survey (jobs, hobbies, activity with family, friends, religion, education and politics as examples of performance; type of rest and satisfaction obtained after effort).

II. Special analysis of the psychobiologic assets (intelligence and memory functions, action tendencies, emotional rises and balance).

III. Range and fluctuation of fitness with regard to work, play, rest, and sleep.

IV. Social relations in family, and the relative rôle of self-dependence and social dependence.

V. Sex development.

VI. Synthesis and balance of personality (personality type, rôle of less directly accessible influences, the position of any "unconscious" determiners).

VII. Difficulties and handicaps.

VIII. Specific disappointments and reactions to them.

IX. Assets and tendencies, favorable and unfavorable, traced to heredity, special sense organ development or motor abilities, etc.

X. An enumeration of the events, experiences and situations in life which constitute special dynamic complexes or determining tendencies, in the form of an index of the significant results of the personality study.

The goal is a natural-history basis and at the same time a sound appreciation of the human character of the facts educed. It aims at clearness of concepts and methods, with freedom and open-mindedness in the acceptance and use of these data, and is as devoid of dogmatism as is possible; freedom from a priori assumptions of extreme mechanistic or extreme humanistic conceptions, an orderly balance and correlation of the material and working with the various sciences, free of any messy mixing of data and issues, or of premature dabbling with psychoanalysis and other overspecialized interests.

The whole course is a reorientation, which can be amplified on an

elective basis with varying emphasis on child study, on sociologic questions, on special lines of inquiry and research and applications, such as are mentioned in Prout and Ziegler's suggestive "Study in Psychobiology."¹

The student will get out of it what he puts into it, but in an orderly and intelligent and usable form. There will be those students who want to get by, but even they will not approach human facts again in a wholly haphazard fashion. And those students who are serious about the work find themselves in possession of reasonable methods of turning to facts that prove themselves, without dogmatic proselytism or involvements in cults. The pragmatism involved is critical and the attitude one of function and progressiveness, active, creative and open-minded, ready for collaboration on as sound a common-sense and scientific basis as the facts and demands make possible and mandatory, stimulating imagination and a scientific conscience and urge for work.

The second year is granted eight, two-hour, sessions for an introduction to the examination of patients in a "mental status" and an outline of psychopathology. The latter does not start with what one knows least about but with the minor deviations from average functions. The student is taught to begin with the layman's complaint, and his own examination of the history and of the patient. His task is to bring the raw material to terms of an experiment of nature, to be studied for the conditions, the factors, their working, results and modifiability. The upshot is that of a functional pathology, experiential and experimental. Basic reaction-types are discussed, abstracts of case studies are offered for group study with emphasis on the "mental status" and the genetic-dynamic formulation of the case as a basis for therapy and diagnostic-prognostic guidance.

There is unanimity of opinion among teachers of psychiatry that these preclinical foundations, psychobiology and psychopathology, are essential in the medical curriculum. This is especially so because they meet the primary objectives of producing, on completion of the medical course, a practitioner who has acquired a sound attitude toward his medical duties and responsibilities along with an ability to deal reasonably well in the early days of his practice with the rank and file of patients presenting mental phenomena which he will see in his daily work. Such a foundation in the first year is essential for the undergraduate clinical instruction in the third and fourth years as well as for graduate training for those physicians who plan to enter special practice in various fields. Teaching of this kind is in accord with the three recent outstanding studies made of the medical curriculum.²

1. *Am. J. Psychiatry*, XIII, 1227-1234

2. Rapplee, League of Nations, British Medical Association.

Brief History of the Meharry Medical College*

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The college was started in 1876 on the south side of Nashville. It occupied the old campus of Central Tennessee College, which afterward became known as Walden University. Central Tennessee College was a missionary effort. It was named Walden in honor of a bishop of the Methodist Church. For many years they had only one teacher, then two teachers. It started with only five students. There were no required standards for admission.

A very interesting thing, this George W. Hubbard, who started it, came down here to fight in the war between the states. Instead of returning to the hills of New Hampshire, from which he came, he decided his life should be spent here to help the "freedmen," as they called them. He was here doing that kind of work with the little Negro children for three years before he got the inspiration to take up medicine and he went to what has since become Vanderbilt University.

As I heard Chancellor Kirkland tell his romantic and inspiring story the other night, I could not help but think of the history of this institution and see that the same struggles, probably more difficult, had to be gone through here, too, for this group.

The school is unique in that it has had only two presidents, George Whipple Hubbard and myself. It is now fifty-eight years old.

Another interesting point, to me a very romantic one, about the institution, is that when Dr. Hubbard got his education it consisted of a course of lectures of six weeks for each of two winters, and then, what has since become Vanderbilt University, gave him his degree. He came over at once to the Central Tennessee College and offered his services to the man at the head of that little struggling school. Again, I think the inspiration of God was working, and this explains why the school is called Meharry.

While he was getting his preparation, the spirit was working on five brothers, who happened to be Methodists, by the name of Meharry. They lived north of the Mason and Dixon line, but wanted to do something to reconstruct the country and to help the Negro. These five brothers had hardly anything in the way of worldly goods, but they decided that if they pooled their interests, two were farmers, two were storekeepers, and one was a preacher, and the whole amount of their money and real estate

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was about \$30,000—they decided to keep half for themselves and their children and give the other half to this work. They gave that money, \$15,000, to the man who was the head of the Central Tennessee College, and that was about the time Dr. Hubbard finished his studies at Vanderbilt.

This is the most beautiful part of that early story. When Dr. Hubbard came to John Braden, president of Central Tennessee College, and started with these five little untutored colored boys, whom as he put it, he had to go out into the highways and byways and bring them to school. A southern surgeon in the Confederate Army came to his assistance and stood by him all the days of his life. There was the man from the North and the man from the South working here to reconstruct our great country. If I were a painter, I believe I could paint a great picture. To me it is a beautiful thing. The name of the surgeon was Sneed. He came to Dr. Hubbard and said, "I can't do very much. I am getting to be an old man, but whatever good I can do I want to help you, because you have begun a great work here."

From that small beginning of two teachers and five students, the institution has grown to five departments—medicine, dentistry, pharmacy, nurse training and dental hygiene. It has graduated more than 4,000 students, and they are found in practically every civilized country of the world. Most of them came from the South, and most of them have stayed in the South, but you will find them in Africa, in Liberia, in the islands of the South Seas, and in almost every civilized country.

Those two men began their work in an old barn, and then, piece by piece, getting \$20 here, \$25 there, and \$50 there, they finally got what some of the older men who have been here before know as the "Old Meharry," a few old rickety buildings. That was all they had when I came here February 1, 1921.

The school had gone down. It did have once, for the sake of encouragement, an "A" classification, hoping it would get new life. Then it went down to "B". Dr. Colwell told me it really ought to have been in the "C" class. I do not know whether it was this Association or the Council on Medical Education and Hospitals that told this old man, who was by now 80 years of age and tottering, that if he did not get some endowment and some full-time teachers they would have to close the school. They could not even classify it as a "B" class college.

It was then that the new day came, as I see it, just as Chancellor Kirkland gave you the story of Vanderbilt. These great boards came to our assistance, but made certain very definite requirements before they gave it. With their help we put a third story on the old hospital, a little bit of a hospital, and we renovated some of the old buildings.

We got along until 1930, and then, after about twelve years of praying, struggling, threatening and almost fighting, I got together a little more than two million dollars. Where did it come from? A million and a half from the General Education Board. Two hundred and fifty thousand from the Rosenwald Fund, \$50,000 from Harkness, and about \$35,000 from the city of Nashville and our own alumni. But there was not a person who would give a cent to dentistry. Just a few years before, as you know, the Vanderbilt Dental School had to close because nobody seemed to have any interest in dentistry. But when the Vanderbilt Dental School closed there was another one in Memphis. But if this dental school closed, there would be no place in the great Southland, so far as I know, where a Negro could go for training in dentistry. I was desperate. I was turned down by I do not know how many persons.

Finally, I went to Mr. George Eastman. He turned me down the first three times. Finally, the fourth time he said, "You damned little Irishman, I have decided to give you \$200,000." I thanked him, and with that \$200,000 we built and equipped the dental department of this school, and I hope you will be able to see it. The land, building and equipment cost a little more than two million dollars, given largely by the great-hearted men who manage these benevolent boards.

The biggest problem of all has been the building up of a faculty. What we have done in these thirteen years is to pick the best and the brightest, as far as our judgment would help us, of each graduating class and then, again, through the benevolence of men like Abraham Flexner, Arnett, and the gentlemen of the General Education Board, giving them a fellowship or a scholarship, while they were taking postgraduate work. Most of these men who were graduates here have had an internship. Then, of course, we had to have somebody who would monitor or supervise them during that year or two of special study. Most of them have had two years of post graduate or special training.

Our professor of obstetrics had the hardest time getting his training in obstetrics. I was British born myself and he was British born, and I thought surely we could get him into a hospital in London. We could not do it. Then we thought we could get him into the Cosmopolitan Paris, or in Berlin, but no. Finally, again, through the help of that angel of ours, Abraham Flexner, Dr. Alleyne was able to get a year of intensive training in obstetrics in Vienna. That is just one case out of thirteen or fourteen cases. We now have trained teachers who have come back to teach and train their own people. That is the hardest and most difficult task because while money, as Dr. Leathers and Dr. Kirkland know, is hard to get, it is not half as hard to get as the right kind of teachers. That is still our hardest problem.

On the Pedagogic Integration of the Divisions of Anatomy*

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I begin with an apology. When the ambitious title of this paper was submitted to our secretary a year ago for inclusion in today's program, it was my intention that the context should fully measure up to it. A brief historical sketch of the different approaches in anatomical instruction was to serve as a background for the tendencies today; charts were to illustrate quickly and in some detail the sequence of the subject matter in an integrated and unified course of human morphology as offered in the laboratory; and an attempt was to be made to gather statistical data of the advantages of such coordination over the old established order of teaching the branches of anatomy in separate courses. But a stroke of ill-fate suffered by the speaker several months ago, from which recovery is slow, prevented the proper preparation of the paper. Indeed, two or three weeks ago he wished to withdraw from the program of this meeting, but Dean Davis encouraged him to remain, saying that a less formal sketch would do at this time.

Needless to repeat, in most universities throughout the world, it is customary to present certain basic divisions of human morphology, such as gross anatomy, histology, embryology, neuro-anatomy, etc., as individual courses, more or less independent of each other. That plan arose and became firmly established because of the marked growth and diversification of biological sciences during the past century, creating specialists who tilled their fields assiduously, and who, in their enthusiasm unwittingly erected bounds around them. Anatomy, true to its tradition and the significance of its name, became even more analytical, and its votaries forgot to synthesize and failed to see the entire human body. In the education of the novice this trend has carried us to a pedagogic absurdity, and the parts which he examined remained lifeless fragments. He has been led to see the externals and the topographical relations of an organ now, its developmental history at another time, and its architecture still later in the year, or vice versa, not to mention its functional aspects, which generally receive little consideration until much later. An instructor has confided to me—and my own experience lends support to his statement—that, because of the traditional teaching of anatomy, the images which he has obtained of

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the macroscopic, microscopic, developmental and functional anatomy of any organ exist in his mind as entities totally distinct from each other, and that only by severe conscious effort is he able to bring them together and superimpose and blend them into a single picture.

Aside from the obnoxious effect which the splitting of the subject matter imposes on the student, its detriment to the instructor is no less. There is many a teacher of anatomy, who by training is such only in a restricted sense. Cytologist, histologist, embryologist, neurologist, or gross anatomist, the adjoining field remains closed to him, and he is unable to guide the pupil beyond his walls. Moreover, his limitation of subject tends to an exaggeration of minutiae in his presentation of it. The student may be impressed by the display of erudition, but its pedagogic value is not always commensurate with the effort expended. The broad training which the integration of morphological knowledge demands is the best safeguard against such idiosyncrasies of the scholar. At the same time, it adds significance to his own researches.

Coordination in the teaching of the anatomical branches is neither a new nor a novel idea. Because of its obtrusive logic, it has been attempted from time to time in the face of the exigencies of the curricular construction, but to carry it out consistently and thoroughly by changing the curriculum has been effected in but few medical schools. There is no doubt that the conception is growing, impelled thereto by the curtailment of anatomical hours in the curriculum and by the reweighing of methods which the individual turns to when he is put on the defensive. The writer believes that in the future the introductory anatomical laboratory will be one and undivided, in which the dissecting table, the microscope, and the simple living experiment will stand side by side and touch elbows once more.

In this country histology and embryology have been taught as one course in several medical colleges, but probably Professor Davenport Hooker of the University of Pittsburgh School of Medicine was the first to publish a plan of teaching the entire content of human anatomy in a single correlated course. He organized and put into effect such a course between 1924 and 1926, the broad outline of which appeared in the 1930 issue of "Methods and Problems of Medical Education," published by the Rockefeller Foundation.

Attracted already as a student to the feasibility of integration in teaching of the anatomical branches, the writer in 1925 submitted a plan to the late Professor Emmel, then acting head of the department of anatomy at the University of Illinois, but it was set aside because of the changes it demanded in the curriculum and the teaching schedule of the members of

the staff. The opportunity to exemplify it came four or five years ago. It soon became evident to the writer that if such a plan was to succeed with the large body of students under his charge, it would be necessary to write a laboratory manual for their guidance, since none of the existing manuals could be adapted adequately. Then, too, it became apparent that the content of the course, as well as the sequence of its parts, might differ according to the point of view of the individual teacher who would place a different evaluation on its various phases. Since, however, the human cadaver remains the chief source of the student's anatomical observations, the old and tried plan of studying it by regions instead of systems suggests broadly the order of coordination. Indeed, much of the student's later practical application in medicine has the same approach.

Few, it is believed, will dispute the logic of introducing the science of human morphology with a study of the germ cells and the product of their union, the embryo. The germ cells may be classed as the "procreative tissues," the first of the fundamental tissues—a distinction which, strangely enough, is not made in textbooks. The examination of them renews the contact made by the student during his premedical course with the basic properties of the cell and living matter. During the study of the embryo, he learns or reviews certain fundamental morphological principles and conceptions, such as the primitive vertebrate ground plan, bodily planes, axes and symmetries, the classification of organs and organ systems, the rôle of the germ layers in their establishment, and so on, not to forget the valuable exercise offered in visualizing three dimensional relationships. The observation of the external form and bodily proportions during the different periods of life in both sexes naturally concludes the introductory chapter of the subject matter.

To this chapter, or Part I (general embryology, anatomy of the embryo, and external form of the body), ten sessions are allowed, extending over two weeks. (Each session represents four hours, of which one is given to a lecture or demonstration, and the remaining to the laboratory. Since such a period is entirely insufficient, if the student is to do the prescribed work thoroughly, he is expected to utilize as much of the great amount of free, unscheduled or optional time as is necessary). Of the ten sessions, one is devoted to the study of the germ cells, another to maturation and fertilization, a third to mitosis and cleavage, the fourth and fifth to the genesis of germ layers and extra-embryonic membranes, the sixth to the conversion of the embryonic disc into the embryonic cylinder, the seventh to the development of the external form of the embryo, the eighth and ninth to its internal anatomy, and the tenth session to the fetal and postnatal development of external form. The differentia-

tion of the extra-fetal membranes and their relation to the maternal organism, a subject which is generally included in general embryology, is relegated to a later division of the course concerned with the morphology of the pelvic region.

Part II deals with general histology and histogenesis, morphology of the superior extremity, and general organology. Excepting the procreative tissues already mentioned, all of the fundamental tissues, their characters, genetic origin and differentiation are examined during this part of the course. Such microscopic work easily runs parallel with the dissection of the extremity which contains almost all of these tissues. The work is so arranged that the sessions spent in dissection alternate with those devoted to microscopy. The study of the fundamental tissues is followed by that of general organology, namely the study of those organs which are spread throughout the entire body, such as bones, ligaments, muscles, tendons, nerves and vessels. By the time the dissection of the hand is reached, the student is ready to examine the minute anatomy of the different parts of the integument: skin, nails, hair, sweat and sebaceous glands.

Thirty sessions are allotted to Part II, of which 15 are given to the dissection of the superior extremity, 11 to the examination of the genesis and structure of the fundamental tissues, and 4 to general organology, including the integument. Coincident with the work of dissection of most regions of the body, much attention is turned to the anatomy of the living, the student being led to study with eye and finger the surface lineaments, contours, masses and palpable structures of the normal and well-made human living body in action and repose. Similarly, in the laboratory for histology and embryology, reference is continually made to living tissues, or to tissues removed soon after death before they have become visibly altered. To inject the idea of life still more deeply into a science which by its very methods tends ever to crystallize into rigidity and inanimation, simple functional experiments on laboratory animals or fluoroscopic observations on the living human body, such as the movements of its joints, or later the topography of the thoracic and abdominal organs, are made from time to time. The practical application of anatomical knowledge is continually pointed out, and patients are occasionally shown to demonstrate the effects of abnormalities or derangement from disease or injury on form and function.

For Part II, the lower extremity would have served as well, but the upper extremity was chosen because it leads most freely to the thorax and to certain organ systems, such as the vascular and the integumentary, which for obvious reasons should receive consideration relatively early in the course.

During Part III, for which fifteen sessions are set aside, the morphology of the thorax and its organs is studied. It is introduced by the examination of the anterior and lateral thoracic walls and the mammary gland which concludes the microscopic work on the integument begun at the end of Part II. Then the macroscopic, microscopic and developmental anatomy of the trachea, bronchi, lungs, heart, great vessels, esophagus and lymphatic system are taken up in orderly sequence. Subsequently, the morphology of the vertebral column, spinal cord, meninges, spinal and sympathetic ganglia and nerves and their relations to each other are considered; but the fiber tracts of the spinal cord are not traced until much later in the year.

Part IV, which represents the morphology of the abdomen and its organs, is covered in sixteen sessions. Beginning with the gross study of the lateral and anterior abdominal walls, the peritoneal relations, and the embryology of the coelom and its differentiation, the intestinal tract and its appendages, and following them the spleen, suprarenals and kidneys are observed in their structural, topographical and formative aspects.

The examination of the posterior abdominal wall is the bridge to the pelvic cavity and its peritoneal relations which initiate Part V, concerned with the morphology of the pelvis, reproduction and general teratology. For this sixteen sessions are barely adequate. The histological study of the kidney, ureter and urinary bladder having been completed, the embryological history of the pronephros, mesonephros and metanephros and the cloaca logically follows and leads to the consideration of the genital organs in both sexes. Starting with the perineal region and external genitalia, the order of study may be indicated superficially as follows: development of the genital glands and ducts, descent of these glands, the inguinal region, testis, spermatogenesis, epididymis, spermatic cord, seminal vesicles, prostate, ovary, oogenesis, ovulation, corpus luteum, oviduct, resting and menstruating uterus, vagina, migration of germ cells, implantation, pregnant uterus, differentiation of fetal membranes, placentation, post-partum changes of uterus. Subjects of this kind bring in their train allied matter, such as sex determination, twinning, heredity, teratology, etc.

Part V is terminated by the study of the pelvic blood vessels, lymphatics, nerves, muscles and articulations, which lead to the dissection of the inferior extremity that constitutes Part VI of the laboratory exercises. Eight or nine sessions will need to suffice for this discipline since it is unaccompanied by prescribed microscopic work. But it lends itself well to parallel discussions of theoretical and practical value pertaining to the mechanics of locomotion and equilibrium, the evolution of the erect stature and its effects, a comparison of the phylogenetic and ontogenetic differentia-

tion of the superior and inferior extremities, and other considerations of similar nature.

Finally, the study of the head and neck permits an intimate integration with the content of neuro-anatomy for reasons too obvious to need further comment. This final division, or Part VII, is covered in forty sessions. As before, the studies of the gross, microscopic, and developmental anatomy are dovetailed as closely as possible. The succession of work may be indicated briefly as follows: Skeleton of the head; regions of the scalp, face, side and front of the neck; pharyngeal derivatives; intracranial relations; dorsal and deep regions of the neck, and basal region of cranium; blood supply, external configuration, morphogenesis and phylogenesis of the brain; hypophysis and pineal body; spinal cord and ganglia; deep temporal and infratemporal regions, salivary glands; teeth; pharyngeal, palatine and laryngeal regions; medulla oblongata; auditory and equilibratory organs; pons and cerebellum; orbital region; midbrain; visual organs; diencephalon; nasal and maxillary regions; olfactory apparatus; basal nuclei of cerebrum; cerebral cortex and medulla. The functional coordination of all parts of the body which the nervous system supervises suggests a review of the human body as a complete living organism at the conclusion of the course.

So logical, natural and self evident does the arrangement and the sequence of the subject matter appear to the writer, especially after its details have been worked out, that any additional explanations would seem like uttering platitudes. Perhaps, generally, the greatest obstacle to a close fitting integration of the anatomical branches is to achieve intimate cooperation of the different members of the staff. The writer was fortunate in working with colleagues, all of whom still possessed the elasticity and adaptability of youth, grasping quickly the common, central idea, and subordinating themselves unselfishly to it. Such effective cooperation is made possible by permitting at the same the fullest autonomy and individuality in teaching and research. It is evident, of course, that an instructor cannot be expected to do concentrated teaching continuously during the entire school year, so that a system of rotation of the teaching staff is necessary. At the present time, there are, excluding the head of the department, six full time teachers (2 associate professors, 3 assistant professors, and 1 associate) engaged in the instruction of the 175 to 180 students enrolled in the correlated course of human morphology at the University of Illinois. The class is divided into four equal laboratory sections, requiring four full-time teachers in charge at any given time during the course, which extends through two semesters. In each of these semesters, each full time teacher is relieved of the work of instruction

during a period of approximately five weeks, which are devoted entirely to research. But even during his teaching periods, representing from sixteen to twenty hours per week, enough time remains to carry on his research program. The lectures and demonstrations given to the entire class are shared by the members of the staff, the assignments being made according to their particular interests. In the laboratory, too, each full time instructor in charge of his section of the class enjoys complete freedom in teaching, the only restriction being his adherence to the sequence of the subject matter outlined. Because of the rotation of instructors during the year, the student is benefited by their different pedagogic methods or points of view. The incentive of competition which such an arrangement induces among the instructors greatly improves the teaching. Furthermore, I have observed the stimulating effect which their acquaintance with the entire field of morphology has on their investigative work. Every one of my immediate colleagues has gratefully acknowledged the broad training which the integration of anatomical branches has given him, and which is kept alive by renewed contacts year after year.

Of greater value is the effect of the correlated courses on the student. There is no denying the fact that the inferior student would rather have the anatomical knowledge parcelled out in tight compartments, which he can then lay aside and forget as soon as he has finished with them. In a course, such as has just been formulated, he is subjected continually throughout its entire duration to a review of cytological, histological, embryological, and gross morphological conceptions and their significance to each other. His retention of factual knowledge may be no greater than in the older plan of studying anatomy, but his comprehension of the subject will be deeper. The superior student, he who should receive consideration first and foremost in the training for the profession of medicine, will come away with a more lasting grasp of the meaning of morphological knowledge and see it as a living unity.

DISCUSSION

DR. HARVEY S. THATCHER (University of Arkansas): Since my contact with the French school of medicine, I have often wondered why their school was, perhaps, in some respects a little better than ours in regard to the teaching of pathology, and I have often pondered over the subject since I returned to this country. I thought at one time that it was because the French language was concise and simple. A French philologist told me it was more akin to the Greek language, but I do not believe that that was the reason. I am sure the reason is that they present the subject logically.

Gross anatomy and histologic anatomy are considered first; then the gross pathologic changes and the microscopic pathologic changes are considered, and the

other sciences are developed from that basis—symptomatology, bacteriology, physiology, and so forth.

When I came to this country I noticed some of the ways in which the subject of pathology is presented. One professor would flash pictures on the screen and they would be very poor reproductions. In one course, I found someone was giving immunological phenomena in one part of the room unrelated to the subject. Some of the professors were using stale notes. Perhaps they had been using them for ten years. They read their notes and did not make any concessions to modern literature.

I am reminded that last week someone mentioned to me that he had heard the lines of Macbeth read just before Macbeth committed murder, where he says, "If it were done, when it is done." The lines were read with the emphasis on "is," and they should have been read with the emphasis on "done." This changed the entire meaning. I think even a child would have been able to understand what Shakespeare meant in those lines. Of course, the tragedy is in bold strokes and is very clear.

Although there are a great many merits in the courses I have observed in this country, there is one course that seemed to stand out above all the rest. The pathologist presented the subject logically. He had a wealth of gross material, and he only used the material in the museum as a supplement to the fresh material. He did not overemphasize technic (autopsy technic or histological technic). He emphasized memory based on reason. He was able to bring out latent talent. I think many of his students have overlooked the fact that this was a remarkable course, because this pathologist had certain eccentricities. It is one of the most remarkable courses I have known, and it really surpasses some of the French courses that I have observed. The teacher was Dr. E. R. Lecount of Rush Medical College.

DR. E. S. RYERSON (University of Toronto): I regret that a paper which I recently sent to the JOURNAL for publication did not arrive in time to be included in the program, because it followed so naturally and logically in sequence the paper of Dr. Kampmeier that I hope you will take the trouble to read in the next number of the JOURNAL a paper which is entitled, "The Teaching of Physical Examination in the Preclinical Years." It is a description of a method of carrying out the examination of the human, which Dr. Kampmeier refers to as the third stage in his course in anatomy, as a means of carrying out the synthesis of a student's knowledge of anatomy.

Most of the anatomy that has been taught in the past has been analytical. Very few students really grasp the idea of the whole. The suggestion is made that after a student has completed such a subject as Dr. Kampmeier has referred to of the upper extremity, that he should be taught the physical examination which is now taught in his junior year, when he comes into the department of surgery or into the department of medicine. In carrying out that physical examination in his course in anatomy, the same principle can be applied to physiology. He should be taught to carry out inspection, palpation and the tests of function as far as the particular regions of the body are concerned.

In order to do that, he has to examine another human being, who is always available in the person of a fellow student. He examines him with the idea not only of determining what the anatomic structures are, but, in view of the change of view with reference to medical education in the future, which has been referred to by both Dr. Metzger and Dr. Wilbur, that practitioners are going to have to

determine whether a man is in a state of health or not, and to be able to examine an individual and say that he is healthy, then a course of this type in the pre-clinical years will be taught with the idea of examining a normal, healthy man. So that when the student enters on his junior year and comes in contact with disease, he will already be familiar with the common methods of physical examination and will not have to spend several weeks in learning common methods of physical examination, and consequently can very much more quickly begin to examine patients.

The argument that has been used against carrying out a correlation between the preclinical and the clinical subjects, or the teaching of clinical subjects in the junior year, is always that the student's interest will too soon become absorbed by an interest in disease. This method of examining a normal, healthy individual has nothing to do with disease. He has no thought of disease. He is thinking of man in a healthy state and trying to determine that, and, therefore, that old argument is completely eliminated by this approach to the subject of making a physical examination as a means of knowing the anatomy of the part and, as I say, the same principle can be carried out in physiology in the way of making physiologic examinations of a part to see if it is functioning satisfactorily, such as the heart, lungs, and so on.

In that way he comes into his senior year with a grasp of the idea that this is not the subject of anatomy or physiology. This is the knowledge of the normal structure of the human being in a state of health, and the normal function of the individual in a state of health. In that way, I think, the course in anatomy could be rounded out extraordinarily well.

I am particularly happy to have heard Dr. Kampmeier's outline of a course of anatomy which exactly prescribes the application of the suggestion that I have made in this article.

DR. E. J. CAREY (Marquette University, Milwaukee, Wis.): The program this morning shows considerably more correlation from beginning to end than possibly will be evident on superficial examination.

In the first place, the objective of a medical school is to put out a qualified practitioner in medicine, and to do so it means that that individual must have a firm basis of the anatomy of the living.

Beginning in the year 1840, anatomy was divorced from physiology, and we had a long period of descriptive morphology. This was looked on as the specific science that the anatomist was supposed to teach. But, anatomy and physiology never exist in nature, in the living, divorced from one another.

Take, for instance, mitosis. There is only one way I can conceive that an individual could understand the tremendous force that is manifested in cell division and the ebullition of the protoplasm that occurs, and that is to see it in the living, in motion pictures. Yet we will spend hours in a cytologic course having a student draw the outline forms and labeling them in detail. The student then will go over into the field of pathology with no concept of those forces that have taken place in cell division.

Appeal has been made by the men who have to do with licensure that we send to them men who have a broad concept of the practice of medicine, general culture, and a basic knowledge of the anatomy of the living, in order to evaluate the apparent degree of health of an apparently normal individual.

Dr. Wilbur has emphasized the fact that more care should be taken with the evaluation of how we teach rather than going into a standardized scheme of a

group of watertight compartments that have no relationship one with the other. This isolation of subject matter is probably one of the legacies that we have received from the standardizing scheme that developed, as good as it was, twenty-five to thirty years ago. The anatomist was supposed to teach just architectural anatomy in a static way. As long as we had a descriptive outline that the students followed through, and we had a cadaver in the horizontal position and followed through a certain number of hours with that type of material, we were supposed to be discharging our function in a medical school in preparing students for the conception of the anatomy of the living. The same applied to a physiologist. How a physiologist could be so subtle as to deal with evanescent functions uncorrelated with structure is again not natural and does not conform to truth. Structure and function belong together.

In research work I cannot follow through problems in anatomy without emphasizing function, and the physiologist at the same time feels free to come into my laboratory in anatomy when it comes to help in regard to problems in anatomy. In other words, it is a change in point of view from that static relationship that has come about by standardizing our courses and going over to a dynamic point of view and preparing our students to practice medicine. Not just simply that the applied side is the only feature to be emphasized, but there is just as much science in the anatomy of the living as there is in the anatomy of the dead.

DR. E. P. LYON (University of Minnesota): I should like to throw the discussion into the form of a figure of speech: We look upon the human body as an integer working in three dimensions, and I suppose it would be better if we could visualize medical education in three dimensions. But it is easier to look on it as two dimensional, and the figure of speech I wish to consider is that of the fabric or the process of weaving. Of course, there is involved the laying of strong parallel fibers, but just as important is the binding of these together with cross strands. Warp and woof are the technical words, and each is equally important.

I look on a medical school with its departmental organization as a machine laying down the parallel threads. If you stick strictly to your departmental arrangement that is what you do. You get this thing of strong parallel fibers of anatomy, physiology, histology, medicine, surgery and so on. You see that the result may be absolutely incomplete, absolutely—well, I will not say futile,—but unless it is woven together it is not a fabric.

Your medical school departmental organization, if strictly adhered to, is the mechanism for weaving the warp together. The only way it is woven together is by the ingenuity of the individual student (a very variable accomplishment), and by each one of you getting out of his department and into the other departments. Then you begin to weave fibers out this way and that and say the relations are so and so.

Therefore, I never complain of the anatomist teaching physiology, or something of that sort, but rather the reverse. I complain when he does not teach physiology, medicine, surgery and pediatrics. All of us must teach everything I think if, under the arrangements which we have, we are to get a fabric instead of a series of parallel threads.

It may be that the departmental relation is the best one for research, but even here I would incline to agree with Dr. Carey that probably it is not. You usually have to be laying out your yarn in other directions in research as well as in teaching.

Instead of sticking to our departments, we ought not stick to our departments. We ought always to be thinking about the fabric as a whole.

That is the figure of speech which seems to me to fit this discussion, and the moral which this discussion ought to leave in our minds.

DR. B. C. H. HARVEY (University of Chicago): I have been much interested in and have a good deal of sympathy with this evidence of rebellion on the part of my fellow anatomists. The anatomists refuse to be limited to pure morphology.

In the history of the development of these sciences in our medical schools, there appears a clue to the understanding of present conditions. When I was young, the preclinical sciences of anatomy and physiology were taught by clinical people. The idea prevailed that medicine was especially interested in the attack by disease and in the battle between the disease and the living, healthy organism. So the clinical staff directed the study of the field of battle, that is of anatomy and physiology. Then the medical schools decided it was better to have the science of anatomy turned over to anatomists and physiology put into the care of physiologists. These specialists were not so much concerned with disease and the battle against disease as with the terrain and with the normal activities in that terrain.

Very soon after that movement of turning over anatomy and physiology to anatomists and physiologists, there began to appear troubles in anatomy and physiology. When Dr. Lyon was still in the University of Chicago there was one incident that I remember, which, perhaps, he has forgotten, that illustrated one phase of those troubles. Students told me that over in physiology one day the professor of physiology commented on the work of the anatomists. He said that an anatomist was a man who tried to find out what was in a telegraph message by studying a cross section of the wire, whereupon one of the students present said that, perhaps, a physiologist was a man who tried to get a picture of the telegraph company's apparatus by reading the message.

It is apparent that a picture of the whole process can be obtained only by combining the two studies, and it is very apparent from this discussion that they cannot be divorced.

I have a lot of sympathy with the feeling of the anatomist that there is no such thing as pure morphology. This has been increasingly apparent recently, perhaps because the physicists are impressed with the fact and have been widely commenting on the fact that matter exists only as forces play through it.

So living structure exists only as the forces play through it that constitute the life of the living body. The two things cannot be and are not separate, and the reason for the rebellion of the anatomist at being limited to pure morphology is inherent in the fundamental facts. The anatomists do not want to be limited to pure structure, and they certainly do not want to have pure structure subdivided into four compartments, as has been done in the medical schools—gross anatomy, minute anatomy, embryology and neurology. All these have to be integrated for any real and satisfactory understanding of structure. They not only have to be integrated with one another, but they have to be studied in consideration of the physical, chemical and biologic processes that play through anatomic structures, which give them their character and without which they would not be structures at all. So the anatomists are right in saying that structure must be studied with a physiologic point of view.

As Dr. Douglas told us this morning about this projected trip tomorrow, there occurred to me the idea that there is a direct analogy between the study of anatomy

and this little excursion he talked about. He said that tomorrow we will go out and look at the terrain somewhere around Nashville. It is a very beautiful terrain with its topographic character, agricultural character and its military history. He mentioned the fact that it was spoken of sometimes as the "Dimple of the Universe," because it was so fertile and because it was so nicely developed physiologically. We expect to see the country and the normal peaceful life that goes on in it. Then he mentioned the battles fought there in the civil war. I hope there will be no more battles in Tennessee, but there will be in medicine. They will be fought in the tissues of the human body. We study its normal life in anatomy and physiology. We know there have been battles in that territory, and the student knows he is going to be very vitally concerned in other battles that will be fought in that territory in the future.

It has been urged that we combine and integrate the study of anatomy with the normal, peaceful function that goes on in the body. That seems sensible to me. It has also been suggested that we correlate the work of anatomy and physiology with pathology, and from the beginning study the battles that are to be fought. I am not sure that it is wise to bring in the battles early.

I would be content to leave the battles, the tumult and the shouting to the pathologists and clinicians and have them brought in after the students have learned the terrain and the normal activities that are going on in it. The students have imagination and the forward look and we can surely trust the pathologists to teach these boys something. Especially, we can trust the students. Those boys are going to make correlations whether we teach them or not. I do not think that we need to worry too much about pathology in the early stages of their medical training.

DR. W. MCKIM MARRIOTT (Washington University, St. Louis): I like Dr. Lyon's figure of speech, only he does not carry it quite far enough. It is true that we have laid down the scientific departments along parallel lines but, at the same time, Dr. Lyon should not forget that there is an influence that weaves the cross threads, that is, the clinical departments. It is the clinical teacher whose duty it is to add those transverse threads to the structure to cross the lines of anatomy, physiology and chemistry and complete the weaving of the final structure.

DR. C. C. MACKLIN (University of Western Ontario, London, Ontario): With regard to Dr. Harvey's remark about leaving the battles to the pathologists, it seems to me the situation in the normal human body may, perhaps, be likened to the political situation in "normal" Europe. There really is not any state of peace in Europe. "Defense reactions" are constantly in progress. Nor is there at any time a state of peace in the normal human body. Battles are going on in it all the time. Battles are now going on within the bodies of everyone sitting in this room. There is no such thing as "peaceful" histology. You can not teach it without looking over into the field of immunity, without seeing something of tissue defense reactions, without bringing in, for instance, the phagocytes which, even under ordinary routine conditions are carrying on their protective activities.

On the other hand, I feel that it is very essential not to take up too much time with discussions of that type, and not to attempt to cultivate the field of the pathologist, but merely to foreshadow some of the applications of histologic knowledge to be made in the pathological course and thus to impress on the student the usefulness of a sound foundation of minute anatomy. All I wish to do is to lead the student to the border and give him previews of the pathologic field as he takes up the

normal tissues. If we are to correlate at all, it seems to me we must do so in some such way as this. An intimacy of interrelationship between the staffs of histology and pathology is necessary, and the course in pathology should follow immediately after that in histology.

I would like to express my admiration of the most excellent presentation of his subject which Dr. Kampmeier gave. I thoroughly agree with him that the various anatomic sciences should be correlated. There is really only one anatomic science, and its various aspects should be so assembled as to make a unified picture of the living human body. It seems to me, however, that the scheme which Dr. Kampmeier proposes can only be put into successful operation where the director is a director in very truth, and has a free hand, and where the members of his staff cooperate fully. Certain technical difficulties may be foreseen; for instance, in teaching the subject of muscle. There are a vast number of muscles to be dealt with in gross anatomy, and this requires much time, whereas in teaching the histology of muscle but a relatively small amount of time is needed. Would the histologist have to interrupt his course while the gross anatomist was engaged with his lengthier duties in such a case? This plan has the effect of subdividing the various courses concerned,—histology, embryology, gross anatomy and neuro-anatomy,—into many fragments of irregular size, and of prolonging some of these courses beyond the usual allotment of time.

Would there be disadvantages in such a plan from the point of view of the research worker requiring extended blocks of free time? Many research programs are best carried out when such provision is made. Then, too, many research men do their best work when their time is quite free from the distractions of teaching. I wonder if Dr. Kampmeier thinks his plan is in the interest of research.

I would like to close on this thought, that I feel research should be put right into the foreground. I would go so far as to say that, in my opinion, schools like Johns Hopkins, which have provided adequately for medical research work, have been the best trainers of medical students.

DR. OTTO F. KAMPMEIER (University of Illinois): I do not know that I have very much to add, except to say that we are not making a pretense of trying to correlate anatomy with physiology or with the clinical branches. We make enough of such contacts, it is true, so that the student can see that correlation, but we follow no planned attempt in that direction.

In regard to Dr. Macklin's question as to the relation of research time to teaching time of the instructor, there is, as was indicated in the paper, sufficient time to carry on his research program even during the periods of concentrated teaching. From five to six weeks of every semester the instructor is freed completely of teaching, so that the research activity he has carried on can then be intensified during that period, or completed. In comparing our present scheme with that of several years ago, I find that the research work and the interest in research has not suffered at all. In fact, I believe the instructor has gained many points of view which are really of very great benefit to this research program.

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Student Accomplishment

The returns from the arts colleges detailing the standing of those of their students who entered medical schools and making a statement as to whether or not they were or would have been recommended had a recommendation been asked for by a medical school are disclosing extremely interesting data.

As to the student's standing in college and in medical school, it is evident that frequently a student who has stood in the upper third of his class in college also makes a good showing in medical school, and students who have stood in the lower third in college frequently do not rise above that level in the medical school. As one would expect, there are some outstanding exceptions to this rule, even among honor students. They are occasionally in the group of "failed" or "dropped" students and have furnished many surprises to arts college authorities. It may safely be concluded, and this is by no means an astonishing fact nor anything new, that outstanding scholastic accomplishment in college does not necessarily determine fitness or aptitude for the study of medicine. One premedical adviser expressed his belief that every student who desired to study medicine should be permitted to do so regardless of his standing in college and that it is one of the functions of the medical school to weed out the unfit.

On the basis of recommended or not, the data thus far compiled are distinctly surprising, showing as they do that failures among the "recommended" students occur with considerably less frequency than among those who were not or would

not have been recommended had an opinion been requested. About 80 per cent of the recommended students had a clear record as against 40 per cent of the not recommended students; encumbered records, about 14 per cent among the "recommended" and 28 per cent among the "not recommended"; failures and dropped, among the "recommended" about 5 per cent, and 30 per cent among the "not recommended."

These figures indicate definitely that the recommendation of college authorities is well worth considering in the selection of students, and that the acceptance of a not recommended student is a hazard. College authorities state definitely that they are not responsible for letters of recommendation written by individual professors. With many medical schools it is a custom to ask for such letters. They insist that the opinion should come from some one appointed by the college to evaluate a student's fitness for medicine, such as a premedical advisor, or from a committee appointed for that purpose. Some colleges state frankly that they do not wish to assume the responsibility, hence leave the question entirely in the hands of the medical school authorities having from experience learned that little, if any, attention is paid to such opinions. Still others give an opinion only when asked to do so. A few colleges have set up elaborate evaluating machinery and seem to give the matter very careful consideration.

Cooperation in this matter between the colleges and the medical schools would seem to be indicated and should prove productive of good results.

Congress on Medical Education, Hospitals and Licensure

The thirty-first annual Congress on Medical Education, Hospitals and Licensure was held in Chicago, February 18-19, 1935. This congress has been held annually since 1905 when it was instituted by the Council on Medical Education and Hospitals of the American Medical Association. Many organizations, educational, professional and others, have cooperated at various times. The Federation of State Medical Boards was the only organization cooperating with the council this year.

A considerable part of the program was devoted to a discussion of tuberculosis and problems affecting licensure. In the first session the work of the council was reviewed by its chairman, Dr. Wilbur. Restriction of the number of professional students, the history of medical licensure and the larger social aspects of medical education were specific topics discussed.

At the second session the institutional and educational aspects of tuberculosis were discussed.

The third session, in which the Council and the Federation participated jointly, was devoted to the discussion of the question, "Should the radiologist, the pathologist and the anesthetist be licensed to practice medicine?"

At the fourth session, osteopathy and licensure, extension teaching in medicine, uniform standards of licensure and whether interns are practicing medicine, were the subjects discussed.

Space forbids presenting even a summary of the many fine papers read, but it can be said that interest in the program was unflagging from beginning to end on the part of the hundreds of persons in attendance.

Opportunity was also given for holding reunions, attending luncheons and dinners and meeting old friends on the part

of associations contacting in some measure with medicine and medical education. Everybody seemed to enjoy being in attendance on the congress, hence had a vote been taken, doubtless it would have been a unanimous one that the congress was a complete success.

* *

Admission to Medical Schools; An Old Racket

Dr. Harold Rypins, Secretary, State Board of Medical Examiners of the State of New York, reports that a scheme to mulct prospective medical students of large sums of money on the promise of obtaining admission to reputable medical schools was recently exposed through the activities of Professor William MacTavish of New York University.

Beard John Dupree, of 22 East 38th Street, and Martin J. Phillips, of 844 East 48th Street, both of New York City, were convicted recently of obtaining \$500 from one premedical student and \$900 from another student by promising to obtain their admission to medical schools. During the trial, signed agreements between these defendants and the students were produced in evidence, containing legal contract for these services.

In addition to these two cases, Professor MacTavish received a number of other anonymous complaints concerning the same "racket."

Defendant Phillips received a sentence of three months in the workhouse, and Dupree was sentenced to the New York County penitentiary, where his term will be fixed between six months and three years.

Deans of the medical schools should be on their guard for similar frauds.

* *

Study of Applicants

Owing to the fact that a considerable number of the cards were not received until as late as January, it was not pos-

sible to complete the study in time to be published in this issue of the JOURNAL. It will be published in the May issue.

However, a few interesting facts, on which the data are complete, may be mentioned now. First, the number of applications increased by 9 per cent over the number made in 1933. The number of applicants increased by 5.5 per cent in 1934. About 2 per cent fewer applicants were accepted than in 1933, yet the number was nearly 800 in excess of the total matriculation in the 1933 freshman class. Considerably fewer multiple applicants were accepted in 1934 than in 1933, but the total number of multiple applicants in 1934 was about 8 per cent larger than in 1933.

The women applicants also had increased in number by more than 20 per cent. About 20 per cent fewer repeaters applied for reinstatement than in 1934. These and many other interesting items will be presented in the final report on this study.

♦ ♦

Matriculation in Medical Schools of Italy

The Royal Italian Consul General has advised Dr. Harold Rypins, Chairman, Committee on Foreign Medical Students, that in spite of the agreement of the Italian government with the Committee

on Foreign Medical Students that no American students will be admitted into Italian schools until their applications have been approved by the Royal Italian Consul General. Several American students have gone to Italy without such approval this year. Some of these students had high school diplomas only and all of these students have been refused admission to Italian medical schools.

The Royal Italian Consul General has requested the publication of this statement in order to warn prospective students of the risk they take in going to Italy in the expectation of studying medicine without obtaining authorization from the Italian Consul General.

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Fraudulent Credentials

Emory Roswell Owens, of Smithville, Texas, was admitted to Meharry Medical College, in 1934, as a freshman. Among other credentials he submitted credit for physics from Paul Quinn College, Waco, Texas. Later it was discovered that this credit was a fraud. Owens had never attended Paul Quinn College. He admitted on questioning that he had perpetrated the fraud, submitting a credit belonging to Ellmore Owens who had been a student in Paul Quinn College. He was immediately dismissed by Meharry Medical College.

College News

Harvard University Medical School

Dr. David L. Edsall, dean of the faculty of medicine and dentistry and of the school of public health, will retire September 1, 1935, and become dean emeritus. He has been a member of the faculty since 1912 and dean of the medical school since 1918.

A portrait of Dr. John Warren, the first professor appointed in Harvard Medical School, was recently presented to the school in memory of Dr. Henry Lyman, who died June 15, 1934. The portrait was given by the officers of the former U. S. Army Base Hospital No. 5, with which Dr. Lyman served during the World War.

Dr. Elliott C. Cutler, Moseley professor of surgery in Harvard University Medical School, delivered the second lecture in the annual Judd Lectureship in Surgery at the University of Minnesota, February 19.

♦ ♦

Stanford University School of Medicine

The fifty-third course of six popular illustrated medical lectures was begun January 4 and will continue till March 15, a lecture being delivered fortnightly. The first lecture was delivered by Dr. James M. D. Olmsted. The subject was "Brain Activities." The second lecture, on "Poliomyelitis," was delivered January 18 by Dr. Harold K. Faber. The third lecture, subject, "Dinitrophenol in the Control of Obesity," was delivered February 1 by Dr. Maurice L. Tainter. The fourth lecture, subject, "Quinine: The First Hundred Years," was delivered February 15 by Mr. Nathan Van Patten. The fifth lecture, subject, "Present Day Relationships Between Medicine

and Industry," was delivered March 1 by Dr. William P. Shepard. The sixth lecture will be delivered March 15 by Dr. Mary H. Layman. The subject is, "Growth and Development in Infancy."

Dr. Ernest G. Martin, professor of physiology since 1916, died, aged 58.

♦ ♦

Indiana University School of Medicine

Dr. Carl H. McCaskey has been appointed head of the department of otolaryngology to succeed the late John W. Carmack, who was killed in an automobile accident.

Dr. D. O. Kearby has been appointed head of the newly created department of bronchoscopy and esophagoscopy.

♦ ♦

University of Mississippi School of Medicine

Dr. P. L. Mull, dean and professor of anatomy, has resigned from the deanship to be effective July 1, 1935. His successor has not been chosen.

Alfred Hume, chancellor of the university, has also resigned. He will be named chancellor emeritus and continue as head of the department of mathematics. His successor as chancellor will be A. B. Butts, now vice president of Mississippi State College.

♦ ♦

New York Post-Graduate Medical School

Scholarships for graduate study, especially in internal medicine, are available for qualified graduates in medicine. Applicants from Allegheny County, Pennsylvania, will be given preference. Applications for these scholarships, limited in number, should be made to the Director of the School.

University of Tennessee School of Medicine

A portrait of Dr. James Bassett McElroy, head of the department of medicine, was presented to the university by alumni and members of the faculty. Dr. McElroy came to Memphis in 1905 as chief of the dispensary and a lecturer in physical diagnosis at the Memphis Hospital Medical College. Later he became professor of pathology and bacteriology at the college, remaining in that capacity until the school was consolidated with the University of Tennessee.

University of Manitoba Faculty of Medicine

A twelve weeks course in anatomy as applied to medicine and surgery is being given by Dr. Alexander Gibson, assistant professor of surgery and lecturer in applied anatomy. The course began January 4. Sessions are held weekly, in the evening. Registration is limited to thirty.

A course in cardiovascular diseases has been arranged and a course of special interest and value to medical health officers is contemplated.

University of Toronto Faculty of Medicine

Dr. Andrew Hunter of the University of Glasgow has been appointed to the chair of pathological chemistry at the University of Toronto made vacant by the death of Professor V. J. Harding. Dr. Hunter is returning to the university after an absence of six years.

He was educated in Edinburgh, Berlin, and Heidelberg, and was for a time on the staff in Physiology in the University of Edinburgh and the University of Leeds. In 1908 he became assistant professor of biochemistry in Cornell University and held that position for six years. He was biochemist in the United

States Public Health Service from 1914 to 1915, when he became professor of pathological chemistry in the University of Toronto, a position he held for four years. In 1919, Dr. Hunter became professor of biochemistry in the University of Toronto and in 1928 he left here to become Gardiner professor of physiological chemistry in the University of Glasgow. Dr. Hunter's appointment takes effect on July 1, 1935.

Johns Hopkins University School of Medicine

Dr. Leslie T. Webster of the Rockefeller Institute inaugurated the 1935 series of De Lamar Lectures January 15. His subject was "Host Responses to Infectious Agents."

University of Illinois College of Medicine

The fifth series of the Charles Sumner Bacon Lectures was delivered by Professor Ludwig Fraenkel, head of the department of gynecology and obstetrics of the University of Breslau, Germany, January 16, 17 and 18, in the lecture hall of the college. The subjects discussed were: (1) "Recent Advances in Gynecological Endocrinology"; (2) "The Practical Application of the Newer Knowledge of Hormones"; (3) "Origin, Migration and Elimination of Uterine-Myomata."

McGill University Faculty of Medicine

A gift of \$10,000 has been received from the Rockefeller Foundation to support a research on the detection of small quantities of lead in the blood and spinal fluid now being made by the department of neurology and physics.

Since 1921, about \$3,000,000 has been received by McGill from the Rockefeller Foundation: \$1,000,000 as a general en-

dowment of the Faculty of Medicine; \$500,000 for the University Medical Clinic; \$57,500 for a study of child life; \$100,000 for research and experimental surgery; \$110,000 for social science research; \$1,232,652 for the development of teaching and research in neurology.



Yale University School of Medicine

Dr. M. C. Winternitz, dean since 1920, has refused reappointment. He will continue as professor of pathology.

Dr. Stanhope Boyne-Jones, professor of bacteriology since 1932, will succeed Dr. Winternitz as dean for a five year period beginning July 1, 1935.



University of Maryland School of Medicine

The newly erected University Hospital was dedicated December 15, 1934.

Dr. Irving S. Cutter, dean, Northwestern University School of Medicine, Chicago, gave the dedicatory address. Other speakers included Albert C. Ritchie, then governor of Maryland, and Dr. Alan M. Chesney, dean of Johns Hopkins University School of Medicine. The building is ten stories high, with the center portion carried up into a tower to provide five extra floors.

The building is in the shape of a cross with wings radiating in four directions from a common center, providing a means of communication up through the center, without transgressing any department and yet readily accessible to all departments. An unusual feature is that practically all the specialized treatment service has been concentrated on one floor, the second. The arrangement of the space from the second floor to the eighth has been designed for teaching, while the ninth and tenth floors have been set aside for private and semi-private pay patients. One section of the floors for obstetric and pediatric patients

has been reserved for those who require special services.

The old hospital building will be remodeled and used for an outpatient department.



University of Michigan Medical School

Dr. Albert C. Furstenberg, professor of otolaryngology, has been appointed dean to succeed Dr. F. C. Novy, who resigned.

A division of health sciences had been created to serve as an advisory unit to the university. It will include the medical school, school of dentistry, division of hygiene and public health, school of nursing, college of pharmacy and department of postgraduate medicine. Dr. James D. Bruce, vice president of the university and head of the department of postgraduate medicine, has been named chairman of the newly created division. An executive committee was also appointed: Dr. Furstenberg, chairman; Dr. Harley A. Haynes, director of the university hospital; Dr. Bruce; Dr. Frederick A. Collier, director of the department of surgery; Dr. Carl V. Weller, professor of pathology, and Dr. Udo J. Wile, professor of dermatology.



University of Georgia School of Medicine

A gift of \$18,000 has been received from Mrs. John W. Herbert of New York and Augusta for the furnishing and equipment of the new wing of the University Hospital. This donation was made as a memorial to the late husband of Mrs. Herbert and to two of their children, Mrs. Gertrude Herbert Dunn and John Oliver Herbert.

The first floor of this building, which was named for Milton Antony, who founded the medical school in 1828, is the new outpatient department of the

University Hospital, while the second floor is a contagious disease hospital. Funds for erection of the structure, which cost \$90,000, were obtained from the Alumni Association of the School of Medicine, a Public Works Administration grant, the City of Augusta and the County of Richmond.



*Boston University
School of Medicine*

Fredrick F. Yonkman, Ph.D., and his assistant, Harkishen Singh, D.M.D., of the Department of Pharmacology and the Evans Memorial Hospital, which is affiliated with the school, after conducting extensive tests on patients, have drawn the conclusion that strychnine in an amount two and three times that found in the usual compound cathartic pills has little or none of the desired and expected results, according to the balloon method of testing, which is accurate. Therefore, they declare, it is not needed as a drug in this type of medical preparation. Their observations are such that may result eventually in a revision of pharmacy laws governing the use of strychnine.

Also, the danger to children of the sugar and chocolate-coated cathartic tablets and pills which appear to them as candy, is so great, according to the Boston University scientists, that the inclusion of strychnine in this type of medication should be prohibited, the Boston University medicines declare.

Dr. Conrad Wesselhoeft, associate professor of theory and practice, was recently presented with the "Oak Leaf Cluster" as a second award of the Distinguished Service Cross, which he already possesses. The citation said, "For extraordinary heroism in establishing and operating a first aid station close to the front line trenches under extreme machine gun and artillery fire."

Dr. Wesselhoeft also has the Croix de

Guerre and several other citations for his service in the World War. The new award was at a ceremony recently conducted at the Boston Army Base by General Fox-Conner, commanding officer of the First Corps Area, aided by his full staff.

The citation for which the award was made states that Lieut. Wesselhoeft, who was later made a captain, set up and operated his first aid station for his men, members of the 102d Co., U. S. Infantry, 26th Division, at the Aisne-Marne offensive, July 18-28, 1918. He maintained his position when the troops fell back and cared for the wounded in front of the front line trenches until the troops had reestablished their lines, refusing to leave the wounded.



Jefferson Medical College

Mr. Alba B. Johnson, president of the Board of Trustees of the College for many years, died January 7 after a long illness. In his will, Mr. Johnson bequeathed \$250,000 to the college. In 1924 he gave \$100,000 to the endowment fund. Mr. Johnson was a leader in civic activities for a generation.

The William W. Root Alpha Omega Alpha Lecture was delivered in the College Building by Professor William K. Gregory, A.M., Ph.D., of Columbia University and The American Museum of Natural History, Friday evening, January 18, 1935, on "The Origin, Rise and Decline of Homo Sapiens."



*University of Colorado
School of Medicine*

Dr. Nolie Mumey has been appointed Lecturer on Medical History, and Dr. Charles J. Kaufman has been appointed assistant professor of medicine (Tuberculosis). Dr. Kaufman is the new Medical Director of the National Jewish Hospital. He takes the place of Dr.

Isadore D. Bronfin, who died last summer.

In the Department of Psychiatry a course entitled "Practical Psychobiology and Psychotherapy" has been established. Assistant Professor Edward G. Billings is giving this course. The work consists of lectures, clinically illustrated, regarding the diagnosis and understanding of emotional and mental reactions occurring in general medical and surgical subjects, and also lectures in which psychotherapy is shown to be applicable to general and special medical practice. A liaison department between the Colorado General Hospital and the Colorado Psychopathic Hospital was established last fall. Dr. Billings is the head of this department.

In the Department of Medicine, a course on "Life Insurance Examinations and Workmen's Compensation Insurance" has been established. The course is given by Dr. William R. Waggener, lecturer on this subject, and consists of lectures on the requirements and procedure of making reports to Life Insurance Companies, and requirements and procedure of making reports under the Workmen's Compensation Laws of Colorado.

* *

Duke University School of Medicine

January 3, 1935, the Duke University School of Medicine, and the School of Nursing began their winter quarters, with a total of 183 students in the School of Medicine and a total of fifty-nine in the School of Nursing. Six seniors in the School of Medicine completed their course December 18, 1934, and are now interning in various hospitals.

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University of Kansas School of Medicine

A graduate of the University of Kansas, whose name is withheld, has recently given \$60,000 for the construction

of the first unit of a Children's Hospital. Construction will begin at once.

Dr. Ralph H. Major, professor of medicine, gave the annual Scripps' lectures at the Scripps Metabolic Clinic at La Jolla, San Diego, Calif., November 11, 12 and 13.

* *

Tulane University of Louisiana School of Medicine

The centennial anniversary of the founding of this school was celebrated in January.

The Medical College of Louisiana, organized in September, 1834, began its first session on January 5, 1835, with eleven students; was chartered April 2, 1835, and on April 5, 1836, conferred the first degrees in medicine or science in Louisiana or the Southwest; October 20, 1838, the Faculty resolved to confer diplomas also in pharmacy and, in March, 1839, issued the first M.Ph. degree.

The Medical College of Louisiana became the Medical Department of the University of Louisiana in 1847. It was composed of four faculties, law, medicine, natural sciences, and letters. The University of Louisiana became the Tulane University of Louisiana July 5, 1884, following Mr. Paul Tulane's first donation to it.

The Tulane Medical Department was one of medical colleges existing in the United States in 1901, the oldest in the Southwest, the fourth in age founded south of the Potomac and Ohio rivers, and the fifteenth in the United States.

* *

University of Virginia Department of Medicine

January 21, Dr. J. T. Murphy, of Toledo, and Dr. Plin Morse, of Detroit, spoke before the University Medical Society on the subject of "Bone Tumors: Their Clinical, Radiological and Pathological Aspects."

January 23, Dr. C. C. Speidel addressed the Montreal Neurological Institute on "Nerve Injury and Recovery."

At the meeting of the Medical Society on February 6, Dr. Thomas Fitz-Hugh, Jr., of the Department of Internal Medicine of the University of Pennsylvania, spoke on "Pernicious Leukopenia (agranulocytic angina): Its clinical and experimental background and present status."

Dean J. C. Flippin attended the meeting of the House of Delegates of the American Medical Association in Chicago, February 15, and the meetings of the Council on Medical Education and Hospitals February 18 and 19.

♦ ♦

Ohio State University College of Medicine

The annual Founder's Day exercises will be held March 1-2. Clinics will be held at various hospitals. A special session will be devoted to normal and pathologic reactions of the glands of internal secretion and a symposium on cardiology.

Addresses will be delivered by Dr. Russell H. Oppenheimer, dean of Emory University School of Medicine, and Dr. Edward D. Churchill, John Homans professor of surgery, Harvard University Medical School.

Class luncheons and fraternity banquets will be held at stated times.

♦ ♦

Vanderbilt University School of Medicine

Dr. Gunnar Nystrom, professor of surgery at the University of Uppsala, Sweden, and Director of the University Hospital, is now in residence at the School of Medicine as the Abraham Flex-

ner Lecturer for 1935. Dr. Nystrom will remain during February and March. Five of his lectures have been delivered: February 6, Embolism of the Arteries of the Extremities; February 8, Pulmonary Embolism; February 11, Swedish Experiences in Combating Appendicitis; February 18, Cytology of Joint Exudates as an Aid to Diagnosis; February 20, The Treatment of Medial Fractures of the Collum Femoris.

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University of Minnesota Medical School

Dr. Logan Clendening, professor of clinical medicine in the University of Kansas School of Medicine, delivered the second Clarence Martin Jackson lecture February 20. The lecture was established by xi chapter of the Phi Beta Pi Medical Fraternity in honor of Dr. Jackson, professor of anatomy in the University of Minnesota.

♦ ♦

University of California Medical School

A series of lectures designed to give the senior students a background in the art, ethics and business of medicine has been added to the schedule for the spring semester.

Three Guy K. Woodward prizes in internal medicine were awarded to three students in the third, fourth and fifth year, respectively, for the best essays showing evidence of original thought on subjects related to internal medicine. The first prize was \$150, the second, \$50 and the third, \$25. The subjects discussed were arteriosclerosis, measles and amebiasis.

General News

Orthopedists' Examining Board

In January the American Board of Orthopedic Surgeons was organized to certify qualifications of physicians who wish to specialize in that field. Dr. Melvin S. Henderson, Rochester, Minn., was named chairman, and other members include Drs. Fremont A. Chandler, Edwin W. Ryerson and Philip Lewin, Chicago; Henry W. Meyerding, Rochester, Minn.; William Barnett Owen, Louisville, Ky.; John C. Wilson, Los Angeles; Hulett J. Wyckoff, Seattle, and Samuel Kleinberg, New York.

* *

University of Geneva Medical Fellowship

The Institute of International Education announces the establishment of a Fellowship for graduate study at the medical faculty. A stipend of 3,000 Swiss francs is provided.

To be eligible, a candidate must be an American citizen, a graduate of an approved American medical school, or the holder of a master's or doctor's degree in a science related to the medical field, and must have a thorough command of the French language both written and spoken. Either a man or woman may apply. Preference will be given to unmarried candidates under 35 years of age.

Closing date for filing applications is March 15, 1935. Application blanks may be obtained from the Secretary, Student Bureau, Institute of International Education, 2 West 45th Street, New York.

* *

Psychiatric Internships

The Worcester (Mass.) State Hospital announces six psychiatric internships of twelve months to begin July 1. Reg-

istration must be made before March 1 and the examination will be held March 15 at the hospital. In addition to a rotating service in medical and surgical wards, organized instruction in the following courses will be offered: clinical psychiatry, psychoanalysis, administrative psychiatry, biopsychiatry, juvenile psychiatry, psychiatric social service, neuropathology, fever therapy, endocrines in psychiatry, research methodology, psychometrics in psychiatry, and biometrics.

The hospital provides maintenance. Unmarried graduates of class A medical schools who have completed an accredited internship in medicine are eligible. Applications should be addressed to the Director of Clinical Psychiatry at Worcester State Hospital, Worcester, Mass.

* *

Graduate Courses in Obstetrics

The South Carolina Medical Association announces a series of seven courses in obstetrics for physicians of the state to be given during the coming year beginning in April, with Dr. James R. McCord, professor of obstetrics in Emory University School of Medicine, as the instructor. Each course will begin on Monday and run through Friday. The course is part of a campaign to reduce maternal mortality in the state.

* *

Harvey Lectures

The fourth Harvey lecture of the year was delivered by Alfred N. Richards, professor of pharmacology, University of Pennsylvania School of Medicine, January 17, at the New York Academy of Medicine, on "Processes of Urine Formation in the Amphibian Kidney."

The fifth lecture was delivered by Dr.

Edward C. Dodds, director of the Courtauld Institute of Biochemistry, the Middlesex Hospital, London, February 2, on "Specificity in Relation to Hormone and Other Biologic Reactions."

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Prize for Research in Biochemistry

Eli Lilly and Company, Indianapolis, has established under the auspices of the American Chemical Society a research award of \$1,000 and a bronze medal to stimulate research in biologic chemistry by a young man or woman working in a college or university in the United States. The nominee for the award must not have passed his thirty-first birthday on April 30 of the year in which the award is made and must have accomplished outstanding research in biologic chemistry. Work in immunology, pharmacology, clinical investigations and experimental therapeutics may not be included in the term biologic chemistry for the purpose of this award.

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Medical Center in Shanghai

Construction has been started on a medical center in Shanghai, China. Buildings will be erected on a twenty-one acre tract donated by the Rockefeller Foundation to the board of directors of the Shanghai Medical Center. The head of this board, which is made up of twenty-seven Chinese government officials, business men and physicians, is Dr. H. H. Kung, minister of finance of China.

The first structure will be a hospital with accommodations for about 550 patients, but the plans call for an ultimate capacity of 1,000. The hospital will be financed with funds solicited by the Shanghai Medical Center; \$200,000 has already been subscribed. The Chinese government will finance the construction of a building on the same site for the National Medical College, plans for

which have already been approved. This project will cost about \$125,000.

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Lea & Febiger Memorial Volume

A volume commemorating 150 years of continuous publishing has been prepared by this firm.

The business was established January 25, 1785, antedating the Constitution of the United States by four years. Since then it has been in continuous operation in the same family, one of the members of the present firm being a great-great-grandson of Mathew Carey, the founder.

The volume is illustrated with portraits of the founder, Mathew Carey, the Marquis de la Fayette, who gave Mr. Carey \$400 to establish himself as a publisher, Nathaniel Chapman, first editor of the *Philadelphia Journal of the Medical and Physical Sciences* and first president of the American Medical Association, and others, and facsimile reproductions of two letters of commendation received by Mr. Carey from George Washington, dated 1785 and 1788, respectively.

In the early days the firm gave its attention to general literature, and among its important publications were the Bible in quarto, both the Douay translation and the Authorized Version, which for a considerable period were the only quarto Bibles of American manufacture in the market; Weems' biographies of Washington and Marion, Jefferson's "Notes on Virginia," Bonaparte's "American Ornithology," and (in this country) the Waverley Novels, and the works of Dickens; also the works of Washington Irving, the novels of James Fenimore Cooper, the "Encyclopedia Americana," and other famous books.

Later it began specializing in medicine and has continued in this field to this day. Since 1859 it has been the publisher in America for Gray's Anatomy.

Book News

Manual of the Practice of Medicine

By A. A. Stevens, M.D., formerly professor of Applied Therapeutics in the University of Pennsylvania. 13th Ed. W. B. Saunders Company, Philadelphia. 1934. Price, \$3.50.

For forty-two years this book has been a valuable aid to many thousands of medical students for whom it is especially written. It is of handy size, concise and a good companion to a larger and more discursive work on the subject. It has been brought up to date, by deletion of much obsolete matter and numerous additions, without adding materially to the size of the book.

* *

Diseases of Children

Edited by Hugh Thursfield, M.D., and Donald Paterson, M.D., Physicians to the Great Ormond Street Hospital for Sick Children, London. 3d Ed. William Wood & Company, Baltimore. 1934. Price, \$10.

Written by thirty-six eminent English pediatricians. The revision incorporates the results of the latest researches in the entire field, with new chapters on many subjects, including blood transfusion, heredity, the newly born infant, diseases of the accessory nasal sinuses and ear, rheumatism, allergy, tuberculosis, cystoscopy and pyelography. Many of the older illustrations have been replaced and new ones added.

* *

Textbook of Surgery

By W. Wayne Babcock, M.D., Professor of Surgery and of Clinical Surgery in Temple University. 2d Ed. W. B. Saunders Company, Philadelphia. 1935. Price, \$10.

Complete revision, many chapters re-

written; much new material and 150 illustrations added. The newer anesthetics are discussed, as well as injuries and diseases caused by lower animals, and the treatment of snake, lizard and insect bites. Thus, the domain of surgery is enlarged considerably. Incursions into ancillary fields are many and noteworthy. The author apparently has endeavored to present his subject as fully and completely as is humanly possible. He has succeeded in doing so, hence the book is very bulky, which is not a fault.

* *

Diabetes Mellitus and Obesity

By Garfield G. Duncan, M.D., C.M. (McG.), Associate in Medicine, Jefferson Medical College. With an introduction by Thomas McCrae, M.D., Professor of Medicine, Jefferson Medical College. Lea & Febiger, Philadelphia. 1935. Price, \$2.75.

Purely scientific, theoretical and controversial matter has been eliminated, resulting in a volume the study of which will give the medical student a good working knowledge of these disorders and their complications. Many tables setting forth the composition of foods of all sorts are given. Important bibliographic references are cited.

* *

Practical Endocrinology

By Max A. Goldzieher, M.D., former Professor of Pathology, Royal Hungarian University, Budapest. D. Appleton-Century Company, New York. 1935. Price, \$5.

This book presents a survey of symptoms common in endocrine disorders; describes the systematic application of the procedures which lead to a diagno-

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sis of an endocrinopathy and the detection of the gland which is mainly responsible for the condition and discusses useful methods of treatment. The use of potent glandular products is amply covered, and sane advice is given as to the methods of administration, dosage, and additional nonglandular therapeutic methods. This volume is primarily a practical one.

♦ ♦

Bee Venom Therapy:

Bee Venom;

Nature and Effect on Arthritic and Rheumatoid Conditions

By Bodog F. Beck, M.D., New York. D. Appleton-Century Company, New York. 1935. Price, \$5.

The volume offers a full account of the chemical composition, physiological effects, and clinical applications of bee venom. It also contains a critical account of the general attitude toward bee venom, an interpretation of its value, and justification of its use. It is full of information, suggestions, theories, comments, and observations. The author explains the pathological immunity toward bee venom of sufferers from arthritis and rheumatism, and also the etiology and pathology of these conditions.

♦ ♦

Illustrated Electrocardiography

By Joseph H. Bainton, M.D., and Julius Burstein, M.D., respectively, Chief and Associate of the Cardiac Clinic of the Morrisania City Hospital, New York City. D. Appleton-Century Company, New York. 1935. Price, \$5.

One hundred full page plates showing 155 electrocardiograms are the feature of the volume. The description of each plate is on the opposite page and analysis has been simplified by individually marking each record with white letters which clearly designate the points of intended analysis. The records

have been presented in a graded sequence from normal to abnormal and from simple to more complicated phenomena. The nomenclature is uniform throughout.

The effects of various drugs are demonstrated graphically in complete series. Several acute infections are followed through by means of electrocardiograms. Coronary occlusion is closely checked by series of records representing time intervals ranging from one month to over five years.

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Tuberculosis:

A Book for the Patient

By Fred G. Holmes, M.D., Director of the National Tuberculosis Association. D. Appleton-Century Company, New York. 1935. Price, \$2.

A manual for the patient who has tuberculosis or the individual who suspects he may have it. It is nontechnical, comprehensive and written so that the patient can understand thoroughly the nature of his disease and possess a permanent manual that will enable him to carry out doctor's orders to maximum effect.

♦ ♦

Dietetics for the Clinician

By Milton Arlanden Bridges, B.S., M.D., Assistant Attending Physician and Chief of Diagnostic Clinic, Post-Graduate Hospital. 2d Ed. Lea & Febiger, Philadelphia. 1935. Price, \$10.

Over 300 pages have been added and 190 diseases in which diet plays a rôle are now incorporated. The diets have been increased to 250 and almost 800 menus have been presented, arranged in the form of three meals a day for at least three days and in some cases, particularly in obesity, for a week or longer. The section on pediatrics has been clarified, modified and extended, and more space is devoted to the dietary treatment of the diseases of children than in

any similar work. The section on vitamin factors of diet is now the most concise, up-to-date and accurate presentation of vitamin information obtainable. The miscellaneous section of Part II contains dietetic notes of the greatest practical value. In this section will be found food adjuncts, including a scientific treatment of the tobacco question and tables of alcoholic beverages containing striking material from the most reliable and recent sources.

The appendix includes over 200 pages of accurate and complete tables summarizing food analyses made especially for this book and constitutes a contribution which would have been impossible were it not for outside financial aid.

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*Brief Outline of
Modern Treatment of Fractures*

By H. Waldo Spiers, M.D., Professor of Orthopedic and Fracture Surgery, College of Medical Evangelists. William Wood & Company. 1935. Price, \$2.

Presents the fundamentals of treatment of fractures. Very practical. Well illustrated by many line drawings. Especially valuable for the student.

Synopsis of Surgical Anatomy

By Alexander L. McGregor, Lecturer on Surgical Anatomy, University of the Witwatersrand. 2d Ed. William Wood & Company, Baltimore. 1934. Price, \$6.

Presents in outline form the anatomy of the normal and of the abnormal structures of the human body; concise, with hundreds of original illustrations. Prepared especially for clinical clerks.

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Aids to Psychiatry

By W. S. Dawson, M.D., Professor of Psychiatry, University of Sydney. 3d Ed. William Wood & Company, Baltimore. 1934. Price, \$1.50.

♦ ♦

Multum in Parvo

Handy for review and to carry in the pocket for speedy, convenient reference. Concise but complete.

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Aids to Embryology

By Richard H. Hunter, M.D., Lecturer in Anatomy, Queen's University, Belfast. 2d. Ed. William Wood & Company, Baltimore. 1934. Price, \$1.25.

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